Scottish & Southern Electricity Networks

TRANSMISSION

TECHNICAL APPENDIX 10.2 OUTLINE PEAT MANAGEMENT PLAN

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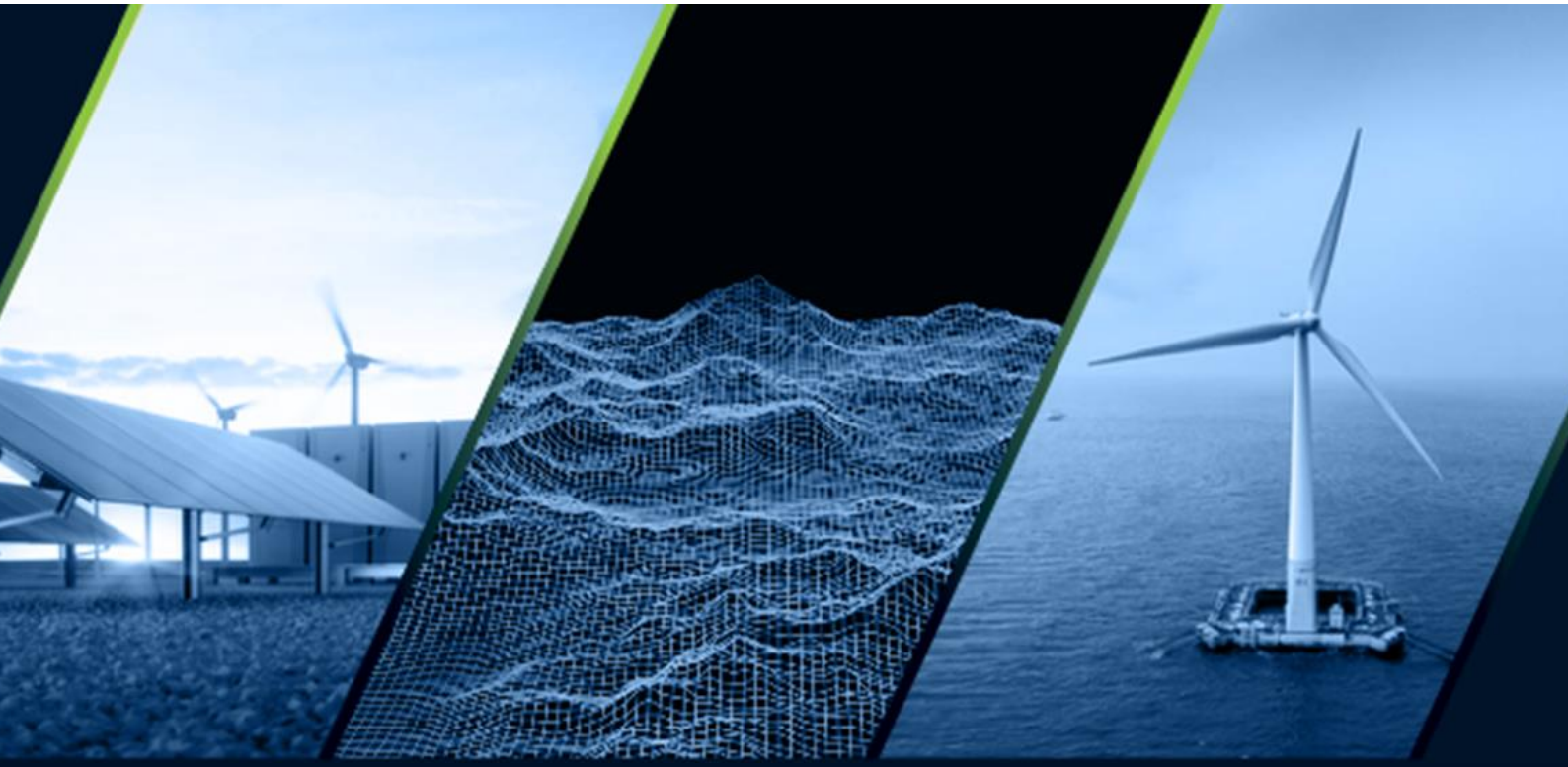

Lewis Hub (AC Substation & HVDC Converter Station)
TA10.2 - Outline Peat Management Plan

Client	:	SSEN Transmission
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Document Notes

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Information

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1 Introduction

1.1 Background

Scottish and Southern Electricity Networks Transmission plc (SSEN Transmission, "the Applicant") are seeking Planning Permission in Principle (PPiP) for construction of the Lewis Hub AC Substation and HVDC Converter Station and associated 132 kV and 400 kV AC Substation works (hereafter "the Proposed Development") near Stornoway on the Isle of Lewis.

The site is in two distinct geographical areas. The eastern area, referred to in this document as 'Arnish Moor' comprises the Proposed Development and lies approximately 2 km to the southwest of Stornoway. The Arnish Moor site is approximately 1.3 km^2 (c. 130 ha) in area, bordered to the west by the A859 road connecting Stornoway with the south of Lewis, to the south by the Creed Park recycling centre and to the east by the Arnish road connecting Stornoway to port installations within Stornoway Bay. The western area, referred to as 'Creed North' is a restoration area within which material excavated from Arnish Moor is proposed to be used to placed to restore peat removed by historical cutting. The Creed North area is c. 1.6 km^2.

Error! Not a valid bookmark self-reference. provides an overview of the Proposed Development extent, superimposed on satellite imagery of the Site.

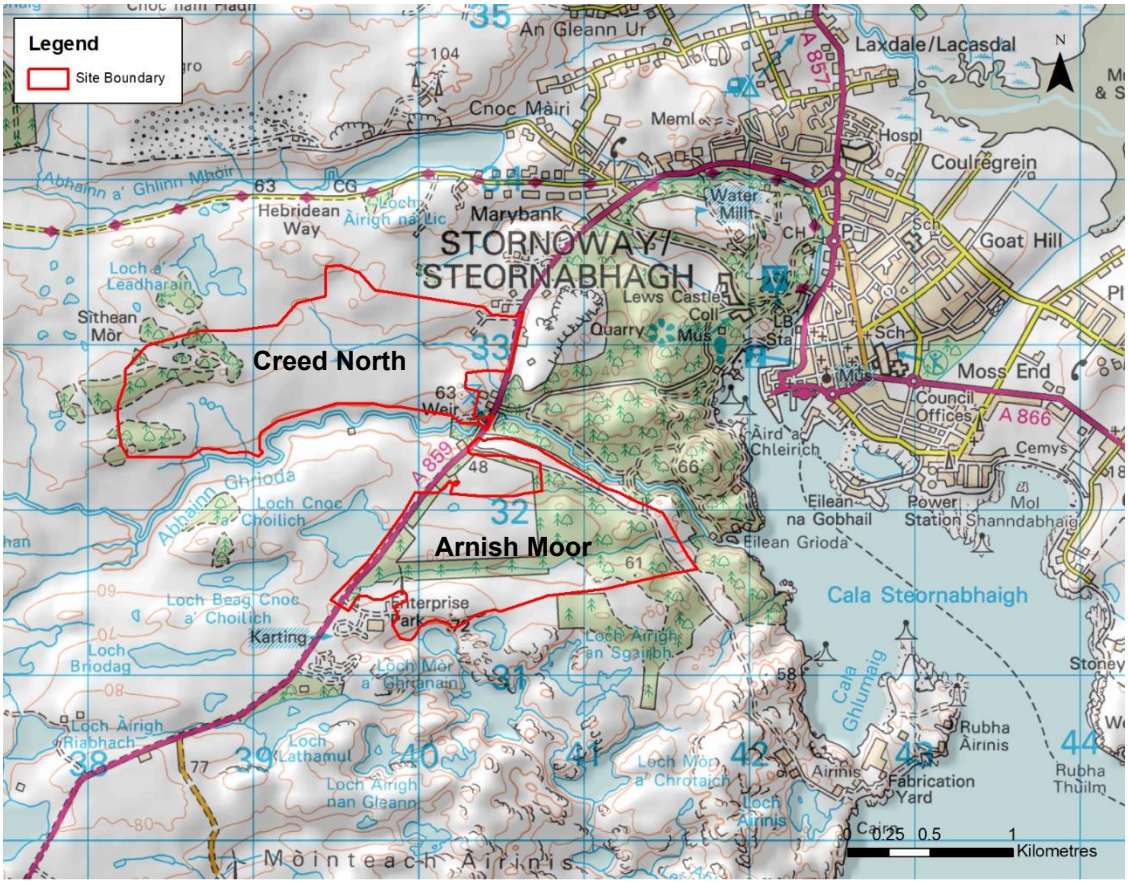

Plate 1.1 Location of the Proposed Development

The Proposed Development will comprise:

A High Voltage Direct Current (HVDC) Convertor Station, in turn comprised of:

- Two main converter buildings housing transformers, converters, dynamic brake system and DC hall;
- Service and control building between the converter buildings;
- Two AC Hall and Filter Equipment buildings; and
- A number of smaller auxiliary buildings (diesel generator, spares building, etc).

A joint 132 kV and 400 kV substation, comprising:

- Three 132/400 kV Super Grid Transformer (SGTs) buildings, each with an overall footprint of around 45 m by 78 m and a maximum height of 20m. They would be enclosed to protect from the weather and reduce the noise impact;
- 400 kV GIS substation building and associated control building; and
- 132kV GIS substation building and associated control building.

The following ancillary works:

- Vegetation clearance;
- Upgrade existing or establishment of new junction bellmouths;
- The diversion and/or culverting of an existing land drainage channel;
- Extraction of rock from borrow areas or quarries;
- Establishment of temporary and permanent access for the construction and maintenance of the Proposed Development;
- Establishment of new drainage channels and attenuation ponds for site drainage;
- Establishment and reinstatement of temporary site compounds; and
- Establishment and reinstatement of borrow areas for peat management.

This Outline Peat Management Plan (OPMP) follows guidance (Scottish Renewables & SEPA, 2012) on the assessment of peat excavation and reuse for construction in peatlands in Scotland. The OPMP was prepared in parallel with a Peat Landslide Hazard and Risk Assessment (PLHRA, Appendix 10.3) and is informed by peat depth probing undertaken by Fluid Environmental Consulting.

1.2 Scope of Work

The scope of the OPMP is as follows:

- Summarise the design principles adopted for design of the substation platform with respect to peat soils, including the approach to peat characterisation and the identification of opportunities taken to minimise impacts on peatlands within the Site.
- Calculate the potential volumes of peat that may be excavated in association with construction, both acrotelmic and catotelmic peat.
- Identify and justify reuse of acrotelmic and catotelmic peat where it cannot be reinstated at source.

- Identify good practice measures to ensure excavated peat is stored safely and with minimal loss of function prior to its reinstatement.

The OPMP follows the advice issued in Comhairle nan Eilean Siar's Scoping Opinion response of 26/11/2024 (Ref. 24/00325.SCOPING) and follows a meeting held with SEPA on 31/10/24 in which outline proposals were presented and key points for attention raised and discussed.

1.3 Report Structure

This report is structured as follows:

- Section 2 provides an outline of relevant guidance relating to the excavation, storage and reuse of peat and indicates how the mitigation hierarchy has been applied.
- Section 3 provides an overview of the Site and proposed infrastructure based on the scheme described in the main EIA chapters and on desk study review of site information.
- Section 4 describes the approach to and results of peat excavation calculations; and summarises opportunities for reuse of excavated peat soils within the Site.
- Section 5 describes reuse proposals for peat excavated during construction, including for restoration within Creed North.
- Section 6 provides general good practice measures and measures specific to the conditions at the proposed site.

Where relevant information is available elsewhere in the Environmental Impact Assessment Report (EIA), this is referenced in the text rather than repeated in this report.

2 Context to Peat Management

2.1 Peat as a Carbon Store

Priority peatland habitats comprise blanket bog, lowland raised bog, lowland fens, and part of the upland flushes, fens and swamps, as listed in the UK Biodiversity Action Plan (UK BAP). Blanket bog is the most widespread of these habitat types in Scotland, and therefore it is blanket bog that is usually of relevance for proposed developments in peatland areas.

Blanket bogs in the UK started forming in the early Holocene, with most UK bogs initiating prior to 6,000 years ago under cooler and wetter conditions than at present. Where bogs remain waterlogged and peat forming plant species persist, blanket bog is still considered to be actively forming and accumulating organic matter, and therefore can be considered a carbon sink. A bog that is not losing carbon/peat but is no longer accumulating organic matter can be considered a carbon store, and a degrading bog can be considered a carbon source (Mills et al, 2021).

A peatland may change state between sink, store and source through natural processes or as a result of human activity. The purpose of the peat management plan is to avoid impacts on the peat carbon stores at construction sites by avoiding peat, where possible, or by minimising impacts where peat cannot be avoided. Where there are opportunities to improve peat condition, e.g. through restoration, and in so doing, help convert carbon sources into stores or sinks, this may also be facilitated by the peat management plan (usually in conjunction with a Habitat Management Plan).

2.2 Good Practice Guidance

Where peat is to be excavated in association with built infrastructure, it may be considered to be a waste product under the following legislation:

- Environmental Protection Act 1990 (as amended).
- Landfill (Scotland) Regulations 2003 (as amended).
- The Waste Management Licensing (Scotland) Regulations 2011.

In order to address this legislation, a number of guidance documents have been issued to assist Applicant in responsibly planning, installing and operating infrastructure in peatland settings. This OPMP has been informed by this collective good practice, which includes the following documents:

- Good Practice during Wind Farm Construction, Version 4 (Scottish Renewables, Scottish Natural Heritage, Scottish Environmental Protection Agency, Forestry Commission Scotland, 2019).
- Developments on Peat and Off-Site Uses of Waste Peat, WST-G-052 (SEPA, 2017).
- Peatland Survey. Guidance on Developments on Peatland (Scottish Government, Scottish Natural Heritage and SEPA, 2017a).
- Peat Landslide Hazard and Risk Assessments, Best Practice Guide for Proposed Electricity Generation Developments (Second Edition) (Scottish Government, 2017).
- Carbon and Peatland 2016 Map (GIS) (Scottish Natural Heritage, 2016a).

- Carbon-rich Soils, Deep Peat and Priority Peatland Habitat Mapping, Consultation Analysis Report (Scottish Natural Heritage, 2016b).
- Scotland's National Peatland Plan - Working for our future (Scottish Natural Heritage, 2015a).
- Constructed Tracks in the Scottish Uplands, 2nd Edition (Scottish Natural Heritage, 2015b).
- Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste (Scottish Renewables and SEPA, 2012).
- Floating Roads on Peat - A Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with particular reference to Wind Farm Developments in Scotland (Scottish Natural Heritage and Forestry Commission Scotland, 2010).

In general terms, the guidance considers appropriate activities to be undertaken at the planning (Environmental Impact Assessment), post-consent/pre-construction and construction stages. The overarching principles are generally the same across the different guidance documents and are set out below.

During planning (EIA):

i. Determine at a sufficient level of detail the distribution of peat within a site in order to assess the likely level of impact of proposed works.

ii. Calculate the volumes of peat likely to be excavated during construction.

iii. Demonstrate how excavated peat will be managed (ii and iii together comprising an assessment of the "peat and soil balance").

These activities are normally considered within a PMP, delivered as part of the Environmental Impact Assessment at the planning stage.

Given consent, during the pre-construction period:

i. A refined peat and soil mass balance should be calculated through further site investigation works (including intrusive works such as detailed probing across final infrastructure footprints and/or trial pits to verify the nature of probed materials). The resulting final PMP (PMP) should be an evolution of the OPMP, and subject to continued revision as new information becomes available during pre-construction surveys and as construction takes place.

ii. Further detailed topographic survey and design level excavation, storage and reuse plans should be drafted to enable contractors to bid for and implement the works.

iii. Key good practice measures should be identified within the PMP that integrate with other related plans or control documents for construction, including, where applicable, the Construction and Decommissioning Environmental Management Plan, Site Waste Management Plan, Habitat Management Plan (where relevant) and Geotechnical Risk Register.

During the construction stage:

i. Utilise micro-siting, where possible, to optimise infrastructure locations relative to final pre-construction information gathered on site.

ii. Monitor, adjust and implement the PMP to accommodate deviations in expected peat volumes and adapt reuse measures to actual site volumes.

iii. Set-up monitoring programmes to identify the new post-construction baseline and provide a basis for monitoring the success of the PMP, identifying appropriate mitigation where necessary. Typically, longer term monitoring of ground / habitat recovery would be incorporated within an HMP.

Through the different stages of the project, the strategy should be to prevent disturbance to and losses of peat through appropriate reuse, wherever possible.

2.3 Approach at Lewis Hub

The strategy for peat management for the Proposed Development follows SEPA's guidance for developments on peat and uses of waste peat (SEPA, 2017) and aligns with National Planning Framework 4, Soils, Policy 5 in employing the mitigation hierarchy with respect to carbon-rich soils and peatlands. The hierarchy is as follows:

- **Avoid** – by avoiding peatland (peat soils and their associated habitats) altogether.
- **Minimise –** by reducing the overlap of infrastructure with peat, where it is possible to do so, and given other site and design constraints that may influence infrastructure locations.
- **Restore** – by repairing damaged habitats, both those affected by development and those degraded through previous site activities or natural degradation.
- **Offset** – by compensating for residual impacts that remain, with preference for on-site over off-site measures.

For the Proposed Development, a combination of reuse and restoration has formed the peat management strategy. Outline details of this strategy are provided below, and full detail of excavation, reuse and restoration proposals are provided in Sections 4 and 5.

2.3.1 Avoid

Avoidance through site selection

Avoidance involves precluding impact on peatlands through informed layout planning. The extent to which this is possible is not just a function of the amount of peat on site, but also of the presence of other constraints (e.g. landscape and visual impacts, hydrology, terrestrial ecology) and the practical requirements of construction (e.g. acceptable gradients for tracks / laydowns).

The Lewis Hub ‘Site’ comprises an eastern and western area. The western area comprises a large cutover bog west of the A859, bordered to the south by the River Creed. This area is referred to as ‘Creed North’ throughout this report (see Plate 1.1). The eastern area comprises a parcel of land straddling two minor watercourses and bordered to the west and east by the A859 and Arnish Road respectively. This area is referred to geographically as Arnish Moor and hosts the Proposed Development.

Early site selection by the Applicant indicated that the Arnish Moor area was the least constrained of the two geographical areas (see Chapter 3 of the EIAR). Within this site, sufficient plan area was required to site the AC/DC substation infrastructure, which, for the anticipated internal components requires a footprint of circa.570 x 250 m at AC (west side) increasing to 275 m at DC (east side). Within Arnish Moor, only the central part of the site (between the two watercourses) is sufficient in scale to accommodate a plan area of this size.

During the site selection phase, Phase 1 probing was undertaken using a 50 m grid in both Creed North and Arnish Moor. Once an initial position was established within Arnish Moor, further probing was collected to characterise peat depths across this area. The data indicated that peat is prevalent across most of the Arnish Moor area, in common with Lewis as a whole (Plate 2.1), and therefore that avoidance is impractical. Other developed areas in the vicinity of the Proposed Development, which, in contrast to Lewis Hub, are not critical infrastructure, have generally involved peat excavation en-masse to facilitate construction, and this is an inevitable requirement on an island where peat is the dominant ground cover.

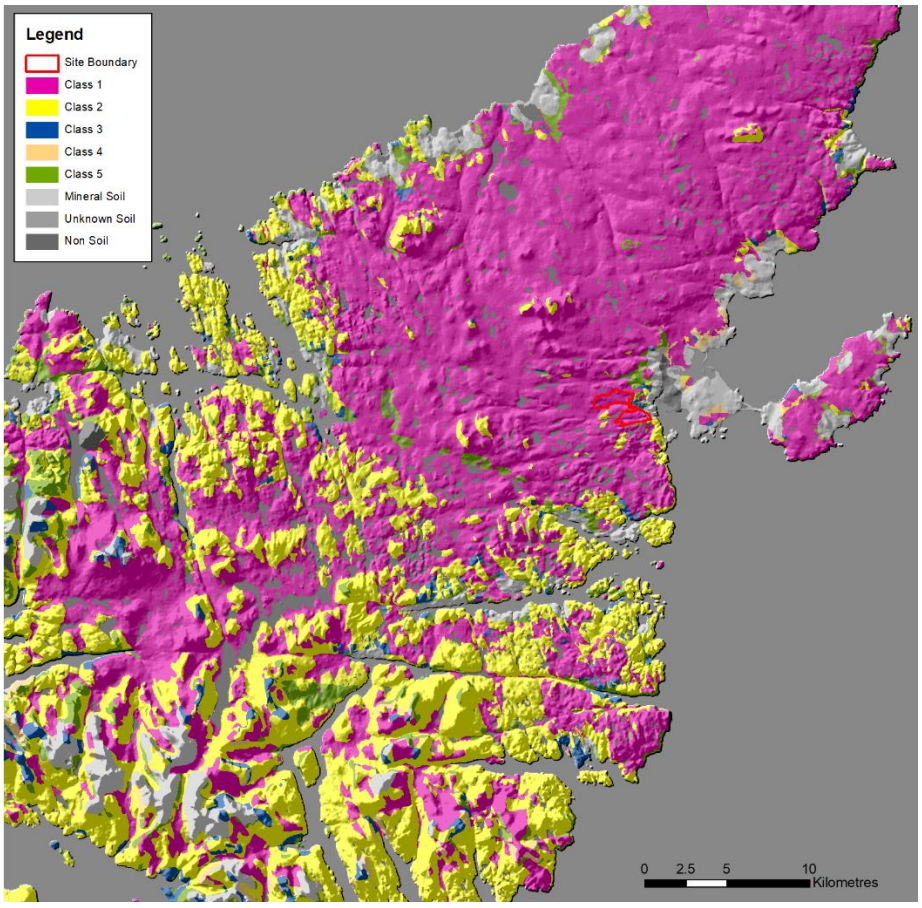

Plate 2.1 The Site within the wider peatland context of the Isle of Lewis (predicted Class 1 and Class 2 correspond to higher quality peatlands)

Habitat data collected for the Proposed Development shows National Vegetation Classification (NVC) communities corresponding to modified bog. Modification is understood to have occurred in association with ground improvement experiments undertaken in the early years of the Macaulay Land Use Research Institute (now part of the James Hutton Institute). Ogg (1938) noted "*since the foundation of the Institute, which is in Aberdeen, and of its experimental farm near Stornoway, Lewis has become more than self supporting in milk and eggs, and fine pastures have appeared and are extending over the formerly worthless peat bogs. The Institute has justified its existence, and has tended inevitably to extend its research activities beyond its original field of peatland reclamation.*" The Arnish Moor geographical area includes Macaulay Farm (the farm buildings surrounded by the Site boundary).

Avoidance through alternative construction methodologies

Alternative construction methodologies were considered for the proposed AC/DC platform, given that this is the only permanent infrastructure aside from the western and eastern access roads. The primary alternative to a cut and fill platform is a piled platform comprising densely spaced piles with pile caps and a load transfer platform, atop which the AC/DC infrastructure would be placed. This is a relatively unusual construction methodology and was assessed to be unsuitable by the project design team due to:

- Over the majority of the platform area, the platform make-up extends into the peat, requiring the peat to be removed unless the finished platform level was raised significantly;
- Cable and drainage trenches will extend lower than the platform make-up depth, requiring removal of peat, even if the platform was piled.
- The HVDC Converter station includes basements and deep foundations that extend lower than the platform make-up depth, requiring peat to be removed even if the platform was piled.
- The convertor technology requires strict settlement tolerances between different infrastructure components and buildings, which are unlikely to be achievable using piled foundations, unless applied over the full extent of the platform areas. If applied across these full extents, 4-5 m pile spacings would be required, and the access requirements for this form of installation would itself require substantial peat excavation.

Consideration was also given to floating the proposed temporary construction laydowns rather than constructing through cut and fill, however this was regarded as impractical due to the weight of vehicles and frequency of use of both Laydowns and 2 and 3. Additionally, as with the platform, Laydown 2 level is below the base of peat to accommodate incoming cable circuits and Laydown 3 will be re-purposed to accommodate a screening bund.

Additional consideration was given to drainage design, given the need for relatively large SUDs ponds to accommodate low frequency high magnitude rainfall / runoff events. This included the use of surface bunds between the AC/DC platform and watercourses in order to provide a series of transient surface ponds that would fill and overspill to the next pond downslope. However, due to the slope gradients and limited space between the platform and watercourses, these would have insufficient capacity to accommodate the required storm discharges as well as potentially encouraging erosion of surface vegetation during heavy rainfall / storm events. Alternative drainage strategies are being explored with specialists to further reduce the excavation required to deliver SUDs ponds and disturbance to the existing peat.

Avoidance through alternative construction locations

Additional Laydown areas outwith the red line boundary have been identified, including at Arnish. The project team intends to progress towards securing agreements for their use, post-consent submission.

2.3.2 Minimise

Much of the site is covered in peat, and opportunities to avoid it altogether are very limited. Phase 1 probing was used in combination with watercourse buffers to minimise the overlap of permanent infrastructure with deeper peat deposits, with flexibility in position largely limited to eastern and western adjustments within the gentle ridge separating the two burns.

The positions of ancillary infrastructure (permanent SUDs ponds), temporary infrastructure (laydown areas) and enabling works (borrow pits) were adjusted through an iterative design process to minimise their overlap with deeper peat. Temporary construction laydowns and SUDs ponds in particular were focused on shallower areas of peat / organic soil. While three laydown areas were originally proposed as part of the Proposed Development, the first of these (Laydown 1) was removed from the proposals due to overlap with peat exceeding 3.0 m in depth.

2.3.3 Reuse / Restore

Reuse of peat in reinstatement of infrastructure locations

Once attempts to minimise impacts have been exhausted, satisfactory end uses for peat that requires excavation as part of construction must be explored. The primary reuse strategy for peat at the Proposed Development is to reinstate temporary construction locations and to reinstate borrow areas for stone that are required for construction of the Proposed Development and ancillary works. In some cases, because these rock areas must be reduced below ground level to win stone, over-deepening has been specified in order to provide accommodation space for peat excavated to access the stone and also for peat that cannot be accommodated elsewhere. These activities are considered in detail in section 5.

Reuse of peat in restoration of Creed North

Early in the project, potential was identified for restoration of peat cuttings in the Creed North area to the west of the A859 (see Plate 2.2). The cuttings cover an extensive area, and are typically 5-10 m in width and 10s to 100s metres in length. LIDAR data (0.25 m resolution) indicates that the average depth of cutting varies between 0.25 m and 0.75 m, while the total cutover area (excluding baulks, raised areas between cuttings) totals around 49.5 ha.

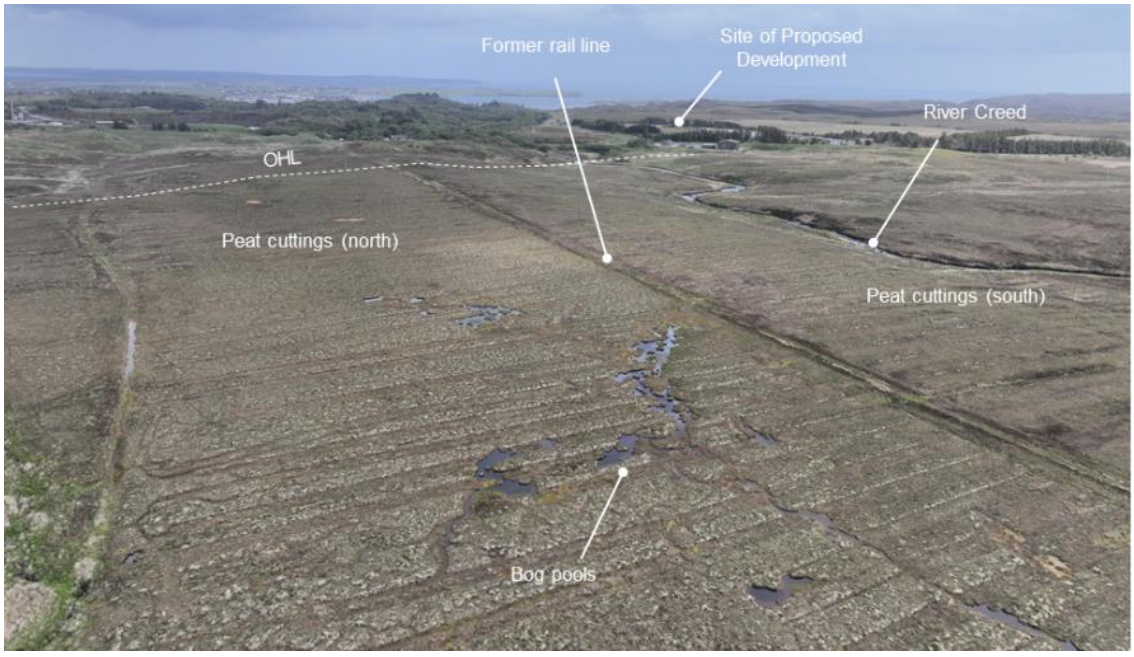

Plate 2.2 Peat cuttings in Creed North with key features mentioned in the text annotated (UAV photography © McGowan Environmental Ltd)

Plate 2.3 shows the extent of mapped cuttings, for which volume loss calculations (due to cutting) were undertaken to determine potential capacities for translocated peat. Based on areas and

depths of cut described above, c. 210,000 m^3 of peat has been excavated from the cuttings shown on Plate 2.3. It is also possible or even likely that the overall volume of peat in this area has reduced in association with drying and contraction of the baulks post-cutting, though this cannot be quantified with LIDAR data.

In order to access and restore these areas, which still contain a considerable depth of peat, construction of road infrastructure would be required to enable passage of large tipper trucks (to carry translocated materials) and excavators (to redistribute material once transported). The network of roads, which must be of cut and fill construction due to the cutting-induced undulating topography of the peat, mean that further peat must be excavated to enable peat reuse in this way. Given the limited capacity available at Creed North and the significant amount of infrastructure that would need to be constructed to translocate peat to it, this option was scaled back to achieve a balance between limiting the construction of new infrastructure (to facilitate transfer of peat) and causing new impacts in one location just to reduce impacts in another.

Other material considerations limiting the use of Creed North for peat reuse were:

- The presence of bog pool systems in some parts of the cutover area, indicating good bog habitats better left undisturbed (e.g. Plate 2.2).
- A requirement for large storage areas to temporarily hold peat in the period between excavation and reuse.
- Differentials in work-rate between peat excavation at Arnish Moor and peat reuse at Creed North (the former would be substantially faster than the latter, leading to 'backing up' of peat while waiting for it to be put in its destination location). This risk could only be mitigated by a substantially extended pre-construction programme of peat excavation, transfer and translocation into Creed North.
- A substantial traffic impact on the A859 arising from c. 200,000 m^3 of peat transfer from Arnish Moor to Creed North (for example, at c. 10 t (equivalent to 10 m^3) loads per transport, c. 20,000 journeys back and forth between Creed North and Arnish Moor would be required).
- A requirement for changes to the A859 to ensure safe dual use of the road by the public and construction traffic given the rate and volume of transfer of materials.

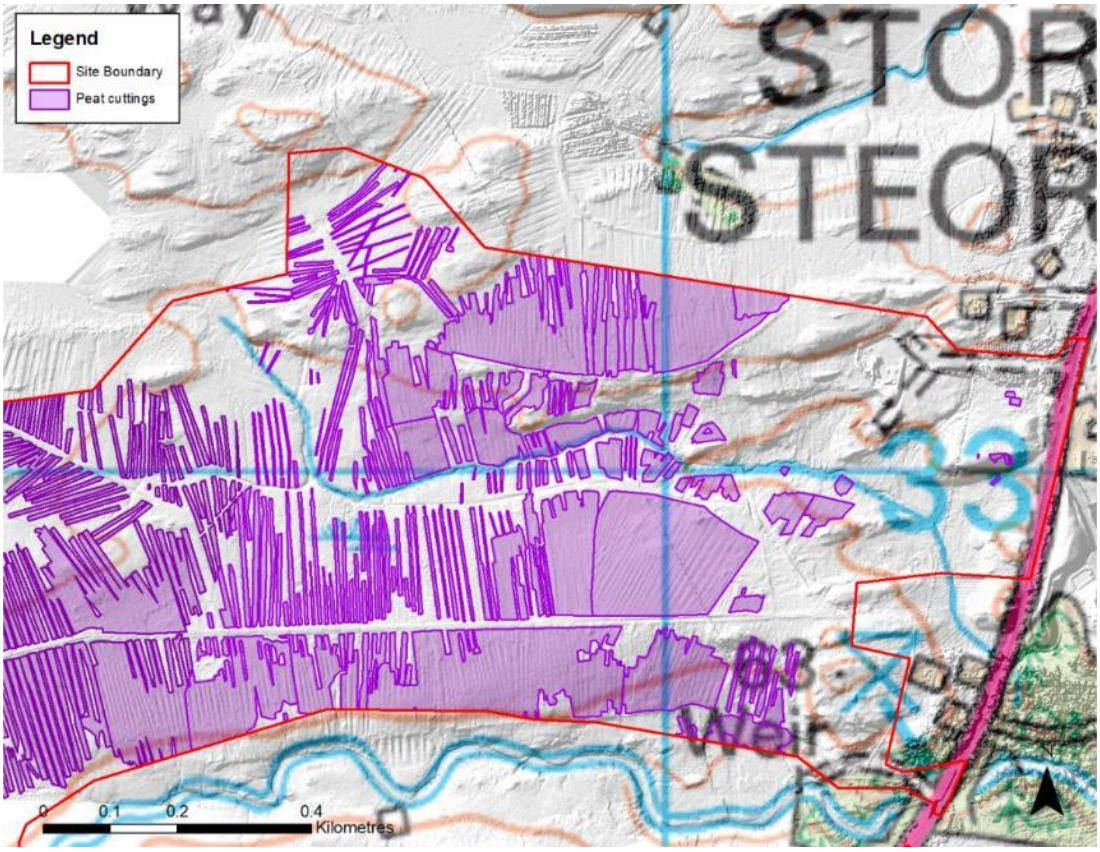

Plate 2.3 Mapped cuttings in Creed North used for volume calculations (western edge corresponds to limit of cutting mapping due to absence of peat depth data beyond this point)

Off-site reuse in Whiskey Production

SSEN Transmission are in discussions with whiskey distilleries for use of small volumes of excavated peat as part of whiskey production. Any volumes taken off-site for this purpose would be done so under waste exemption regulations.

2.3.4 Offset

As part of the Proposed Development, SSEN Transmission is identifying opportunities to undertake compensatory restoration works elsewhere on Lewis using established peat restoration techniques (and not requiring reuse of peat).

2.3.5 Disposal

No disposal of peat is proposed as part of the Proposed Development.

3 Site Characterisation

3.1 Site Overview

The Proposed Development is located on gently undulating lowland peatlands to the south of Stornoway in an area referred to as Arnish Moor. Elevations vary between 70 m AOD in the south of the Site and 20 m AOD closer to the coast, falling gently from west to east and from 65 m to 40 m between the gentle ridge that will host the AC/DC platform and the un-named watercourses that trisect the site to the north and south (Figure 10.2.1). Plate 3.1 shows a 3D perspective view of the Arnish Moor site.

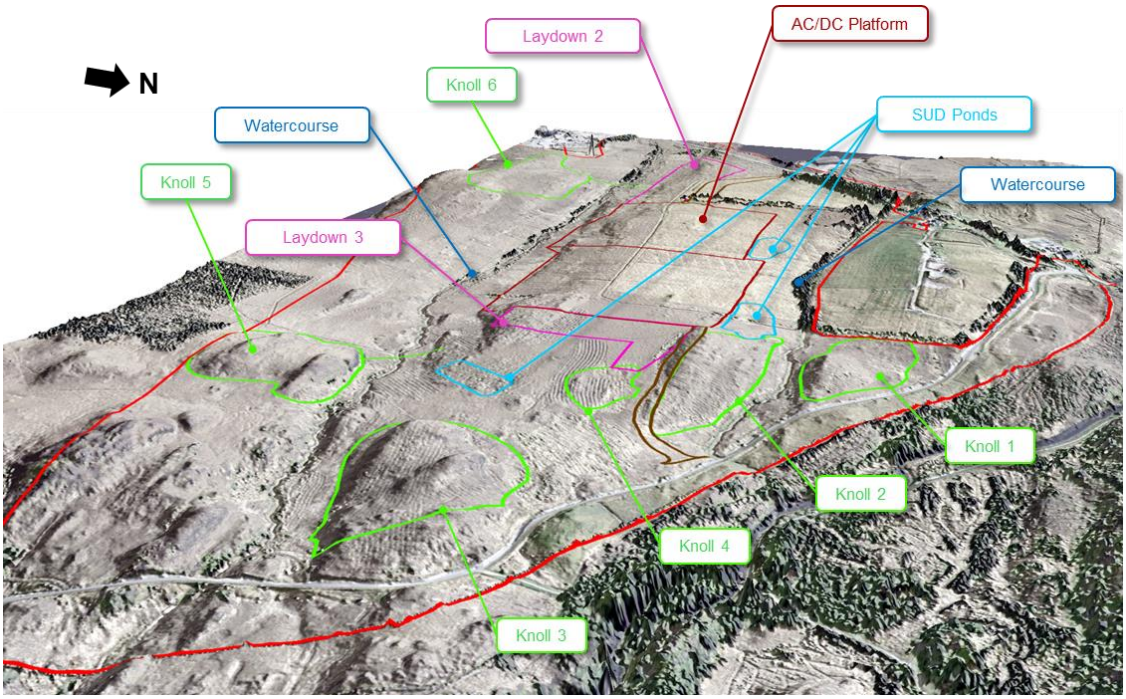

Plate 3.1 3D perspective view of the Arnish Moor site due to host the Proposed Development (a vertical exaggeration of 1.5x has been applied to better indicate the topography, which is very subdued)

Slope angles are gentle across Arnish Moor, except closer to the watercourses and on the flanks of rock knolls that rise out of the peat deposits across the site (Figure 10.2.2).

At Creed North, elevations fall from c. 75 m AOD in the northwest to c. 40 m where the River Creed passes under the A859. Elevations generally fall and rise over a series of gentle ridges towards the Creed. Nearly the entire extent of Creed North has been heavily cutover for peat extraction, with the exception of the limited floodplain adjacent to the River Creed (Plate 3.2). In the north of the Site, there is a council operated grit store accessed from the A859, and this area forms the primary option for access for peat translocation proposals detailed further in section 5 of this OPMP.

Slope angles across Creed North, like Arnish Moor, are gentle, except on the north side of the River Creed where they are moderate (> 5°) in proximity to an east-to-west aligned former railway line that was used to shuttle peat back and forth from cuttings to its point of collection (see Plate 2.2). This is a practical constraint on peat re-use in this area, although the area north of the railway line is unconstrained by slope angle.

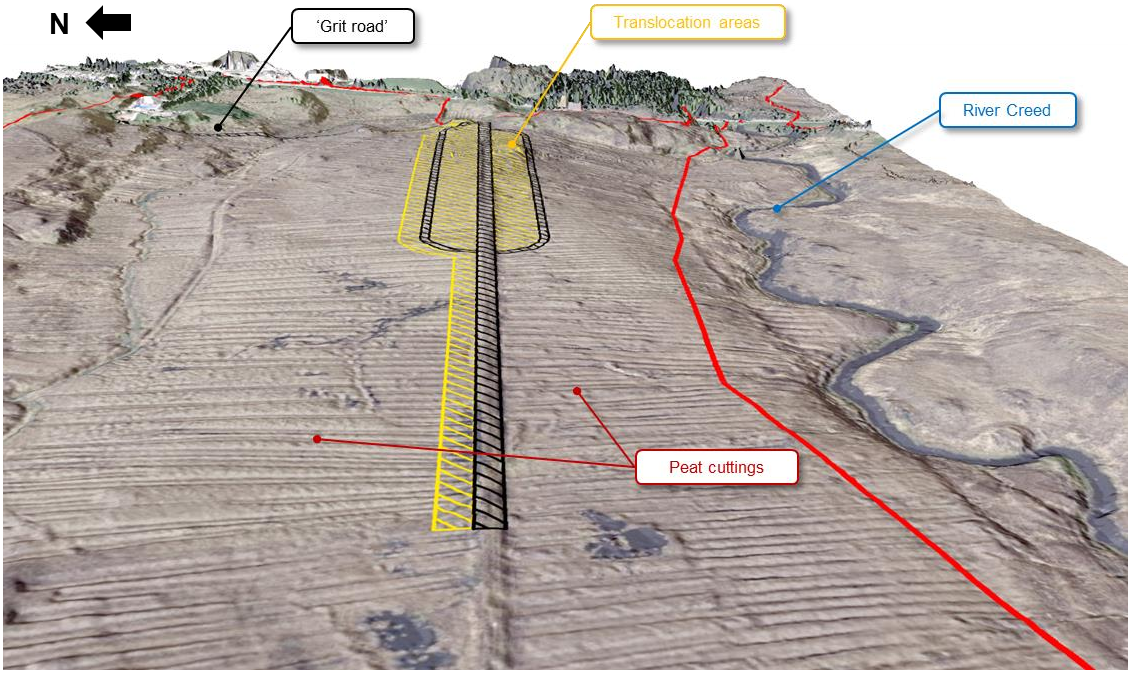

Plate 3.2 3D perspective view of the Arnish Moor site due to host the Proposed Development (a vertical exaggeration of 1.5x has been applied to better indicate the topography, which is very subdued)

3.2 Peat Depth

A total of 8,925 peat depth probes were used to characterise the peat deposits at the site. Probing was collected on a 10 m Phase 2 grid across the full extent of proposed constructed infrastructure, as well as more widely in order to understand potential for peat reuse in the Arnish Moor and Creed North area. Figure 10.2.3 shows the interpolated peat depth model and supporting peat probe locations across the full Site (Arnish Moor and Creed North) and Figure 10.2.4 shows the interpolated peat depth model at the Proposed Development only.

At Arnish Moor, peat is present over large parts of the Site, typically deepest and exceeding 3 m in the east and west of the Site, thinning rapidly over the rock knolls that occupy the southern side of the gentle ridge and the east end of the site adjacent to the Arnish Road. Peat remains relatively deep over the wider Arnish Moor area, particularly south of the southern burn.

Given the extensive footprints required to construct the Proposed Development, opportunities to avoid peat altogether do not exist. However following acquisition of Phase 1 probing, and subsequently Phase 2 detailed probing, a number of design iterations were used to minimise impacts insofar as possible (EIA-R Chapter 3), while additional probing was undertaken to characterise borrow areas and further characterise restoration footprints in Creed North:

- Laydown 1 was removed from the proposals due to overlap with very deep peat.
- The shapes and positions of Laydowns 2 and 3 were modified to minimise overlap with the deeper peat deposits. While Laydown 3 remains over peat > 3.0 m in depth, this footprint provides a dual use in providing the foundation area for a potential screening earthwork to limit views of the Proposed Development from Stornoway. A number of alternative screening locations were investigated between the east end of the AC/DC platform and the Arnish Road, however, as elevation falls to the east, the footprint and size of the screening earthwork

would increase to compensate along with requiring more imported material in areas of deeper peat.

- SUDs ponds, originally located adjacent to the AC/DC platform were repositioned in shallower peat to reduce impact.

At Creed North, peat depth probing was undertaken on a Phase 1 grid only, extending around 1.25 km from the A859. While depths are relatively shallow close to the A859 (generally less than 1 m), they increase rapidly with distance and are frequently in excess of 3.0 m near the western edge of the dataset.

3.3 Peat Geomorphology and Condition

Geomorphological mapping of the site from satellite imagery and LIDAR data (see Figure 10.3.4, TA10.3), supplemented by site walkover by an experienced peat restoration specialist indicates the Arnish Moor site to be a simple, planar bog, with localised rock outcrops (referred to as rock knolls in this report) and with limited evidence for active geomorphological processes (gullying and erosion) or features of interest (bog pools, ladder morphology etc). There is no evidence for peat instability within the Arnish Moor or Creed North areas, though bog bursts have been documented within 10 km of Stornoway in at least three locations (Appendix 10.3, 'Peat Landslide Hazard and Risk Assessment' provides more detail).

Due to the relatively intact nature of the peat deposits within the area of the Proposed Development, there are no features suitable for restoration using excavated peat. Surface vegetation has been compromised by ground treatments on the Macaulay Farm and by failed forestry planting in an area of ploughing in the east. There are also localised drains that generally run north-to-south across the Site, though these are fairly ineffective and largely within the Proposed Development footprint.

The Carbon and Peatland 2016 Map (Plate 2.1) indicates the site to comprise entirely Class 1 peatlands. Despite this, there are no designations within Arnish Moor or Creed North, and the compromised nature of peat soils in Creed North (from cutting) and Arnish Moor (from ground treatments) would indicate that there is room for improvement in both areas.

3.4 Land Use

At Arnish Moor, land use is limited within the Site and there are no land-use related constraints to construction within the area proposed for development. Other than the Arnish Road to the east and the A859, public infrastructure is limited.

At Creed North, the eastern extent of the Site is traversed by an existing overhead line (OHL), a buried water main and a buried fibre optic cable. The council's grit store lines in the north of the Creed North area. Immediately south of the grit store is an area of contaminated land.

The A859 separates the two areas and is the principal route for access to the south of the island from Stornoway. The Arnish Road connects ports in the harbour to the mainland and is also important infrastructure. Proposals are in place for realignment of the Arnish Road as part of the port works, and this has acted as a spatial constraint on the eastern edge of the Proposed Development.

4 Peat Excavation and Storage

4.1 Excavation calculations

All proposed infrastructure will require excavation of peat soils to competent substrate in order to enable construction. Calculations of peat excavation have been based on the detailed Phase 2 peat depth probing data, which provides a high degree of confidence in peat depths over the construction footprints.

In this section, the following terms are used to describe groundworks associated with peat / soil and infrastructure:

- **Permanently excavated:** peat will be permanently removed from the infrastructure footprint, stored locally and reused elsewhere.
- **Temporarily excavated:** peat will be temporarily removed from the infrastructure footprint, stored locally and fully reinstated at the point of excavation, post-construction.
- **Landscaping:** the process of using peat to 'dress' the boundaries of infrastructure.
- **Restoration:** the use of excavated materials to improve the quality of land areas that are considered degraded through mechanisms other than associated with construction (e.g. through cutting or erosion); the term is not used to describe reinstatement activities at infrastructure.

Excavation volumes have been calculated as the product of the average peat depth under each footprint (derived from the peat model) and the footprint area (detailed for each infrastructure type below).

While acrotelmic peat has been estimated to be c. 0.3 m in depth, it is acknowledged that due to the large plan area of proposed permanent infrastructure and the proposed methods of reuse, there will be considerably more acrotelmic peat generated than plan area available to accommodate its reuse, particularly since bare areas for translocation are lacking and there will be very limited landscaping requirements for earthworks. Accordingly, volumes are quoted for peat as a whole and recommendations for prioritising the surface reuse of acrotelmic peat are made at the end of section 5. It should be noted that much of the acrotelmic peat within the main infrastructure area has been modified by previous ground improvement activities (see section 2.3.1), and given that it may contain fertilisers and other compounds, may not be well suited for translocation in any case.

Soils less than 0.5m in depth are assumed to be organic (or other) soils other than peat and are classed as 'soil' for the purposes of this assessment.

4.1.1 AC/DC Platform

The AC/DC Platform (henceforth ‘the platform’) has a footprint formed of the HVDC converter station platform footprint (c. 320 m x 310 m) and substation platform footprint (260 m x 250 m) which must be permanently excavated down to competent substrata. All peat will be permanently removed. The average peat depth across the AC/DC Platform is c. 1.31 m. Table 4.1 shows the anticipated excavation volumes of peat and organic soil (<0.5 m), including peripheral earthworks.

4.1.2 Temporary Laydowns

There are two proposed temporary laydowns, one to the west and one to the east of the AC/DC platform. These laydowns will be used for separate construction teams working on the AC and DC components of the substation.

Laydown 2 is located to the west of the platform and will be temporarily excavated of peat across its full footprint, with peat stored and reinstated once construction of the AC/DC platform is complete. The laydown measures 410 m x 130 m and has an average peat depth of c. 0.79 m.

Laydown 3 is located to the east of the platform. Part of the laydown area will be temporarily excavated and reinstated following construction of the substation. The laydown measures 220 m x 70 m over a majority of its length and has an average peat depth of c. 1.85 m.

The full length of the laydown area out to a distance of 50 m from the platform will then be used as a foundation zone for a screening embankment. The northeast edge of the laydown is the part that will be reinstated.

Table 4.1 shows the anticipated excavation volumes for both laydowns, including associated earthworks.

Table 4-1: Peat and soil excavation volumes for proposed infrastructure and enabling works

		Excavation Volumes (m^3)	
Infrastructure	**Type of Excavation**	**Total Peat**	**Organic Soil**
ACDC Platform	Permanent	212,656	2,872
Laydown Area 2	Temporary	30,189	2,419
Laydown Area 3	Temporary	9,087	101
Laydown Area 3 (under berm)	Permanent	27,935	899
West Access Road	Permanent	12,076	66
East Access Road	Permanent	6,496	568
Pond 1 and Access	Permanent	11,646	460
Pond 2 and Access	Permanent	3,249	261
Pond 3 and Access	Permanent	5,380	0
	Totals	**318,714**	**7,646**

4.1.3 Eastern and Western Access Tracks

In order to access both laydowns and the platform, permanent access tracks are required from the A859 and Arnish Road. Both accesses run along the northern sides of the laydown areas and have associated earthworks. Due to the requirement to work down to the level of the platform, the tracks must be cut and cannot be floated. The average peat depth under the western access track (c. 350 m in length) is 1.36 m and under the eastern access track it is 1.20 m (also c. 350 m in length).

Table 4.1 shows the excavation volumes for both tracks.

4.1.4 SuDs Ponds / Attenuation Basins

Three SuDs ponds (or attenuation basins) are proposed around the platform, two on the north side and one in the southeast. These will comprise excavations involving removal of peat and underlying material to generate sufficient volumetric capacity for stormwater runoff derived from the platform. The ponds will then discharge to the northern and southern watercourses. The average depths of peat in the ponds are 1.71 m (Pond 1), 0.77 m (Pond 2) and 1.22 m (Pond 3).

All peat excavated from these locations will be permanently excavated. Table 4.1 shows the excavation volumes for the three ponds.

4.1.5 Borrow Areas

Six borrow areas have been identified distributed around the platform and laydowns. A considerable volume of material is required to form the platform, construct the laydown areas and tracks, and facilitate access to Creed North for restoration activities.

Where possible, the borrow areas have been sited in areas where peat is thin or absent. The most suitable areas are the upstanding rock knolls distributed across the eastern part of the site. Six main rock knolls have been identified as part of the reuse proposals, numbered 1 to 6, and shown on Figure 10.2.5. Two 'optional' knolls (7 and 8, shown with hashed lines) have also been identified, but are not currently part of the proposals.

The average depth of peat requiring excavation, plan area, and target excavation depth below 'prevailing' ground level (BPGL) of each knoll are shown on Table 4.2. The 'prevailing ground level' refers to the ground elevation around the edge of each knoll, i.e. the non-upstanding gentle bog surface that extends to either side of the rock knoll. Targets depths then assume further excavation below this prevailing ground level. Rock and overburden removed below this level would then be replaced with peat excavated from the proposed development, bringing the ground surface back up to a lower ground level than the original knoll. This lower ground level would be contiguous with the wider peatland and therefore retain hydrological continuity across each reinstated knoll footprint.

The target depths have been compared with the adjacent watercourses to ensure that no knoll is excavated below the adjacent watercourses, although hydrological connectivity between the bedrock set back from each watercourse and the watercourses themselves is unlikely. Following excavation to their target depths, the borrow areas (or borrow pits) may be lined and then reinstated with peat excavated during construction. Further details are provided in section 5.

Table 4.2 shows anticipated excavation volumes of peat for each knoll. The sequence of excavation would be:

i) Removal of pockets of peat and soil from the rocky terrain;

ii) Excavation of the rocks down to target depth BPGL;

iii) Reinstatement with fill, including peat (further detail is provided in section 5.3 of this OPMP).

In order to enable access to the borrow areas, temporary access will be required over the southern watercourse to borrow areas (knolls) 5 and 6. To minimise the need for new

infrastructure, these locations will be accessed directly from the main works using a combination of floating road on gradients <3°, cut road on steeper slopes or in soil, and temporary bridges over the southern watercourse. Following final profiling of the borrow areas (see section 5), the roads will be decommissioned. Table 4-2 shows indicative volumes of peat and soil based on a 7 m wide surface set within the 15 m wide corridors shown on the figures.

Table 4-2: Knoll / borrow area excavation volumes and target depths

Knoll / Borrow area	Mean Peat Depth (m)	Target Depth (m)	Area (m^2)	Excavation Volumes (m^3)	
				Peat	Soil
Knoll 1	0.67	2.5	16,159	10,278	940
Knoll 2	0.66	2.5	18,134	10,586	1,756
Knoll 3	0.65	3	30,197	16,900	3,243
Knoll 4	1.03	2	5,951	6,280	46
Knoll 5	0.77	3	28,213	17,009	4,400
Knoll 6	0.83	2.5	45,154	37,683	205
Borrow Area Access (Temporary)	n/a	n/a	4,140	1,547	474
		Totals	**147,948**	**100,283**	**11,064**

4.1.6 Enabling Works at Creed North

In order to translocate peat into the cuttings at Creed North, enabling works are required to facilitate access to the cutting areas. These will comprise upgrades to the former railway line, which will provide a spine road for access, and north and south access areas running parallel to this spine road providing secondary accesses for excavator working. The spine road is not anticipated to involve peat excavation (the ground is currently vegetated but this overlies a thin veneer of organic soil), the secondary accesses will need to be excavated and constructed as cut and fill tracks to accommodate excavators and peat haulage vehicles. While floated track has been considered, the undulating nature of the ground surface (caused by the peat cutting) precludes this mode of construction, as would the continual rocking of excavators working from the track surfaces.

In addition to these tracks, access to the restoration areas is required from the Arnish Moor site. Various options were considered with the current preferred option being an access from a council owned grit storage area directly south to the restoration area (Figure 10.2.6). A direct crossing from the west of Arnish Moor into the southeast corner of Creed North was considered but excluded due to forming a new access close to existing junctions and the sensitive River Creed receptor.

Anticipated peat excavation volumes for the two secondary accesses and access road from the holding area are shown on Table 4.3. These volumes are based on worst-case peat depth estimates in the absence of Phase 2 probing in this area.

Table 4-3: Excavation volumes for enabling works at Creed North

Infrastructure	Track length (m)	Excavation Volume (m^3)
Grit road	410	696
North track	560	2,270
South track	530	970
Totals	**1,500**	**3,936**

As is clear from Table 4.3, increasing the number of access areas to the north of the spine road, which is the only remaining area sufficiently shallow in gradient to accommodate material, would involve more excavation. While there would be an overall increase in reuse capacity in expanding these enabling works, the decision was made to minimise the area of disturbance to an area that is partially recovered in its current state (noting that peat remains thin here, and is unlikely to accumulate to any significant additional depth over human lifetimes).

4.1.7 Sequence of Works

The sequence of works will be a critical element of the construction programme to ensure that space is available to construct proposed infrastructure and that peat that has been excavated need not be stored for longer than necessary. Ideally, storage time and handling of peat should be minimised, with transport of peat from the point of excavation directly to the point of reuse. This will minimise the requirement for temporary peat storage and on otherwise undisturbed parts of the site.

An indicative sequence of works has been identified to limit the storage of peat, and ideally enable direct transfer of peat from the point of excavation to the point of reuse. This sequence includes generation of rock material from the borrow areas, processing of this rock into aggregate and surplus, and then reinstatement of the borrow area using excavated peat from elsewhere. The outline sequence is provided in Annex 1 to this OPMP.

5 Reuse

5.1 Overview

Excavated peat will be re-used in two ways:

1. Reinstatement of temporary excavations for infrastructure, including borrow areas.
2. Restoration of Creed North.

A high-level overview of these reuse proposals is followed by detailed calculations and outline method statements in sections 5.2, 5.3 and 5.4. Section 5.5 considers alternative options that may also form part of the reuse proposals pending further intrusive ground investigation post-consent.

5.1.1 Reinstatement of temporary excavations

Laydown 2 and a proportion of Laydown 3 will be temporarily excavated to enable construction of the Proposed Development. Subsequent to construction, Laydown 2 will be fully reinstated and Laydown 3 largely reinstated (other than under a landscaped bund) with peat excavated during the works. Due to the need to create working space around the Proposed Development, it is likely that peat from other worked areas in the vicinity of the platform will be used for reinstatement, rather than the originally displaced material. Given that peat across the Site is generally of similar quality, this is not expected to be problematic. Details are provided in Section 5.2 below.

Much of the peat that is excavated will be used in the reinstatement of the six borrow areas distributed across the Site. Reinstatement will occur during construction in line with the sequence of works shown in Annex 1, though this sequence will be updated by the principal contractor following detailed intrusive investigations post-consent. Details are provided in Section 5.3.

5.1.2 Use in restoration

The Creed North area will be restored using peat excavated from the Proposed Development. Restoration will comprise translocation and relaying of peat in cutover areas to return the peat to a depth closer to its likely original condition prior to peat cuttings. Details are provided in Section 5.4.

5.2 Reinstatement calculations for temporary infrastructure

5.2.1 Reinstatement of Laydowns 2 and 3

Following construction of the AC/DC platform, accesses and SUDs ponds, Laydown 2 will be reinstated with an equivalent peat volume to that excavated during construction (see Table 5.1). Temporary construction fill used to level the laydown area will be removed and catotelmic peat placed over the exposed substrate, followed by acrotelmic peat. Dependent on the condition of the underlying substrate, a clay liner may be installed prior to peat placement, and this may use clay (till) materials from elsewhere on site. Proposals are subject to ground investigation and detailed permanent and temporary design.

Laydown 3 will be partially reinstated in its northeast area adjacent to the proposed screening

earthwork and immediately to the south of the eastern access. Reinstatement principles will be the same as for Laydown 2.

Table 5.1 shows the reuse volumes for reinstatement of Laydowns 2 and 3.

Table 5-1: Peat and soil reuse volumes for Laydowns 2 and 3

Infrastructure	Peat Volume (m^3)	Soil Volume (m^3)
Laydown 2	30,189	2,419
Laydown 3	9,087	101
Totals	**39,276**	**2,520**

Both peat and soil will be reinstated in the laydown areas.

5.3 Reinstatement of borrow areas

5.3.1 Overview

The six borrow areas will be reinstated during construction, depending on phasing requirements of peat excavation for individual areas.

The borrow areas are due to be excavated to between 2 and 3 m below ground level. This will create accommodation space for peat excavated in construction locations.

5.3.2 Current condition and target post-reinstatement conditions

The peatland at Arnish Moor comprises undulating low relief modified peatland with localised rock knolls sitting slightly higher in the landscape (see Plate 3.1). The effect of working the rock knolls for material will be to produce post-working voids in the landscape. Given that the entire Arnish Moor area is mantled in peat to a greater or less extent, reinstating peat into the voids, including to greater depths than originally excavated, will remain in keeping with the general distribution of peat in the area. The end result will be a change in condition from a rolling peat lowland with protruding rock knolls to a rolling peat lowland with fewer rock knolls.

Key to successful reinstatement will be the following:

a) Ensuring that reinstated peat remains wet such that it does not oxidise and release carbon and remains a suitable rooting substrate for preferred bog species.

b) Ensuring that reinstated peat remains stable, such that it remains in-situ and does not represent a pollution risk (or potential carbon loss through creep or en-masse failure).

c) Ensuring that peatland surrounding the reinstated areas is not compromised by either the construction works or post-reinstatement condition of the borrow areas.

The means by which these objectives will be met are discussed for each borrow area below.

5.3.3 Borrow area 1

Borrow area 1 is located immediately adjacent to the Arnish Road, and will be accessed directly from it. Peat depth probing shows both organic soil and shallower peat over the footprint, which will be excavated early in construction and translocated to Creed North as part of proposed

restoration works. Acrotelmic peat has been partially compromised by ploughing for failed forestry.

The ground surface is relatively neutral, sloping gently to the south towards the unnamed watercourse that passes north of the AC/DC platform. Post-extraction, the ground surface will be built back up using excavated peat to provide a gentle sloping planar bog surface that falls from north to south (Figure 10.2.6). The ground will be profiled to match the gentle slopes to the west and provide continuity of landform into this location.

In order to facilitate placement of peat, the southern margin of the borrow area will be built up with surplus rock material to provide an internal rock berm slightly elevated above the target depth of peat on this side of the void. A single track will be constructed parallel to the watercourse across the middle of the void to enable passage of vehicles transporting peat back into the borrow area and provide a working platform for excavators working the material. The track will remain in place post-construction and will act as a retention berm for material placed to the north, though it will be top dressed with shallow peat and turves to tie it into the wider landscape and permit shallow downslope movement of water across the reinstated footprint.

Table 5-2: Reinstatement volumes for borrow areas

Knoll / Borrow area	Target Depth (m)	Area (m^2)	Peat Reinstatement Volumes (m^3)
Knoll 1	2.5	16,159	40,398
Knoll 2	2.5	18,134	45,334
Knoll 3	3	30,197	90,591
Knoll 4	2	5,951	11,903
Knoll 5	3	28,213	84,638
Knoll 6	2.5	45,154	112,885
		Totals	**385,749**

Catotelmic peat and then turves of acrotelmic peat will be reinstated into the borrow area, in this order, to replicate the original sequence of peat prior to excavation or appropriate to a deposit of the target depth (in this case 2.5 m). Table 5.2 shows the target volume of peat to be reinstated into borrow area 1 (BA1 on Figure 10.2.5, and Knoll 1 on Plate 3.1). Reference to the peat depth map shows peat depths typically in the range 2.0 - 4.0 m in the wider area, and therefore a target depth of 2.5 m in keeping in the setting. The footprint itself lies on a gentle spur receiving surface runoff from the west. Since peat will be placed no higher than the surrounding peatland ground surface, runoff and therefore hydrological continuity should be maintained.

An example reinstatement profile is shown on Plate 5.1, including internal tracks, the downslope rock berm and anticipated ground levels following reinstatement. Variations on this profile will be used at each borrow area. Indicative internal track alignments are shown on each borrow area on Figure 10.2.5.

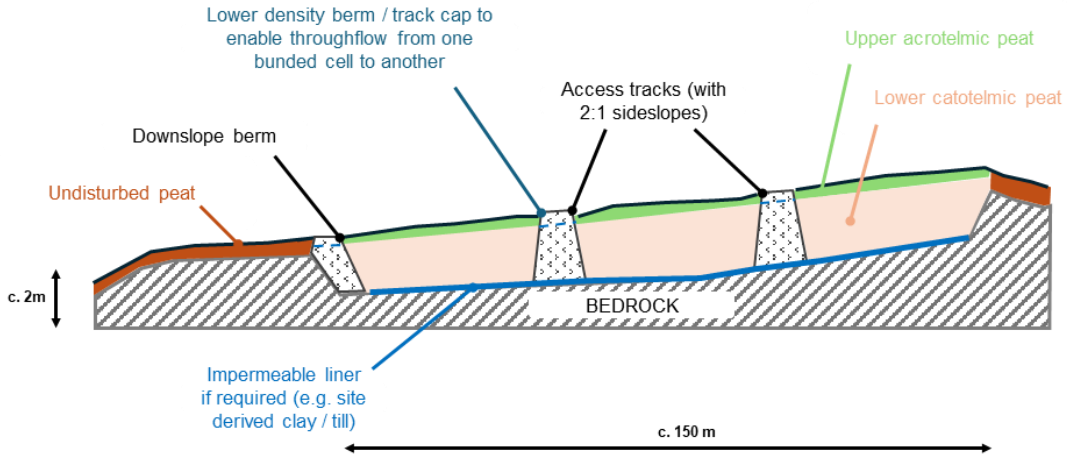

Plate 5.1 Indicative borrow area reinstatement profile, including internal access arrangements, downslope rock berm and impermeable liner (note that the profile is very vertically exaggerated)

5.3.4 Borrow area 2

Borrow area 2 is located immediately adjacent to the eastern access road to Laydown 3, and will be accessed directly from the east access. The northern un-named watercourse lies immediately to the north. Peat depth probing shows largely organic soil and shallow peat over the footprint, which, as with borrow area 1, will be excavated early in construction and translocated to Creed North as part of proposed restoration works. As with borrow area 1, the acrotelmic material has been ploughed for forestry.

The ground surface slopes at moderate gradients to the north towards the unnamed watercourse that passes north of the AC/DC platform. Post-extraction, the ground surface will be built back up using excavated peat to provide a subtly benched profile running up to permanent eastern access track. The ground will be profiled to match the gentle slopes to the west that run above the watercourse.

In order to facilitate placement of peat, the northern margin of the borrow area will be built up with surplus rock material to provide an internal rock berm slightly elevated above the target depth of peat on this side of the void. As with borrow area 1, a single track will be constructed parallel to the watercourse across the middle of the void to enable passage of vehicles transporting peat back into the borrow area and provide a working platform for excavators working the material. The track will remain in place with top-dressing, as described for borrow area 1 above.

Catotelmic peat and then turves of acrotelmic peat will be reinstated into the borrow area, in this order, as with borrow area 1. The target depth for borrow area 2 is 2.5 m. Table 5.2 shows the target volume of peat to be reinstated into borrow area 2. Figure 10.2.5 shows the setting of borrow area 2. As with borrow area 1, the prevailing peat depth over the wider area are consistent with a 2.5 m deposit being located within this footprint.

Topographically, the borrow area lies to the north of the gentle ridge summit on which the AC/DC platform will be constructed. The western end of the reinstated area will be adjacent to the earthwork screening bund. The south side of the borrow area borders a change in surface slope away from the borrow area, and so it will not naturally receive water from the adjacent area to

the south, therefore it is recommended that water captured from the bund and access is allowed to disperse over the borrow area to maintain moisture contents in this area.

5.3.5 Borrow area 3

Borrow area 3 is located near the current alignment of the Arnish Road, from which it will be accessed directly. The eastern edge of the borrow area has been aligned to be set-back from the proposed Arnish Road realignment, but could be expanded to the east to the present-day road alignment if the realignment works do not take place, increasing capacity and reducing the target reinstatement depth. The southern edge of the borrow area is adjacent to the southern un-named watercourse that passes south of the Proposed Development. Peat from borrow area 3 will be used to restore Creed North. Again, acrotelmic peat has been compromised by ploughing for forestry.

While the rock knoll itself imparts moderate slope angles to the ground surface within the borrow area footprint, the fall across the area once the knoll has been removed is gentle (less than 5 m over 170 m measured from north to south across the knoll), and therefore the ground surface will be reinstated post-extraction to provide a very gently sloping surface falling to the south and east to mirror the wider ground surface.

The southern margin of the borrow area will be built up with a rock berm, as with borrow areas 1 and 2, and a curved track following the post-works contour will be constructed to enable plant to deliver and place peat in the borrow area. Again, this track will be retained and top-dressed. Peat will be reinstated (catotelm first, acrotelm afterwards) in line with proposals for the previous pits, to a target depth of 3 m, consistent with the prevailing peat depths immediately west and north of the area. Table 5.2 shows the anticipated reinstatement volume.

Topographically, the borrow area is at the lowest point within the Site, and will receive surface water from the west, keeping it hydrologically connected to the wider peat deposits.

5.3.6 Borrow area 4

Borrow area 4 comprises a small area within organic soils and shallower peat immediately to the south of the eastern access track. As with borrow areas 1-3, the peat in this area has already been compromised by ploughing for forestry. Peat from borrow area 4 will be used in the reinstatement of borrow area 2.

The rock in this area is very subdued and close to surface rather than significantly protruding above ground level. The target depth for reinstatement will be 2.0 m, with a levelled ground surface and no requirement for internal tracks or bunding. The sequence of peat reinstatement will follow that outlined previously. The anticipated reinstatement volume is shown in Table 5.2 and the borrow are location on Figure 10.2.5.

The location sits immediately east of the earthwork screening bund and will receive some water shed from this feature, which will help maintain moisture levels.

5.3.7 Borrow area 5

Borrow area 5 is one of three borrow areas that sits outside the immediate construction area (areas 1 and 6 being the others). The area sits in an area of pronounced rock outcrop immediately south of the southern watercourse. Probing shows organic soil over the rock and shallower peat around the periphery of the borrow area. Due to the lateral extent of the borrow area in a north-

to-south axis, two tracks will be constructed across the post-working void space to facilitate delivery of peat for reinstatement. The borrow area will be directly accessed via a temporary track and bridging structure from LD3.

The prevailing slope direction to the east and west of the rock knoll is gently sloping to the north towards the watercourse, with very deep peat exceeding 3.0 m to either side of the knoll. Accordingly, the target ground profile will be a similar gently sloping profile to the north, with a rock berm at the northern limit, and two additional internal berms (that will be top-dressed) running along the contour within the borrow area. The ground will be reinstated to be level with the prevailing ground surface. The target depth for reinstatement is 3.0 m, in keeping with the surroundings.

The borrow area sits slightly below the ground level of afforested peatland outside the Site boundary to the south and will therefore be hydrologically supported by overland flow from the adjacent peatland.

The anticipated reinstatement volume for borrow area 5 is shown in Table 5.2 and the borrow area footprint on Figure 10.2.5.

5.3.8 Borrow area 6

Borrow area 6 is located south of Laydown 2 and the AC/DC platform on a gently sloping peatland that falls towards the un-named watercourse bordering the south of the construction area. Rock is relatively subdued at ground surface. Peat depths correspond to shallow to moderate depth peat in this area. As with borrow area 5, post-working the ground will be built back up to the elevation of the prevailing ground surface to the west and east, with a target reinstatement depth of 2.5 m. As with borrow area 5, due to the extent of the borrow area, in addition to a rock berm at the downslope (northern) limit of the borrow area, two tracks will be constructed along contour (west to east) across the areas to facilitate peat transfer and placement. Access will be via a temporary road and bridging over the southern watercourse. The lower rock berm will be contoured to ground level and will enable throughflow at its crest to ensure connectivity of water supply to the peat between the borrow area and watercourse.

The borrow area lies to the north of a small rock knoll above two lochs outside the southern site boundary, and therefore receives water from the south (albeit from a limited catchment).

The anticipated reinstatement volume for borrow area 6 is shown in Table 5.2 and the borrow area footprint on Figure 10.2.5.

5.3.9 Sequence of borrow area reinstatement

An indicative reinstatement sequence for each borrow area is provided below, subject to further construction level design and site specific ground investigation works:

i) Clay-rich till, screened from stripped overburden (either locally or from the primary infrastructure locations) will be used to create an impermeable liner. Where insufficient clay-rich materials are available on site, clay will be imported to create this liner.

ii) Downslope and intermediate bunds / tracks will be constructed to within 0.25 m of the finishing level of the proposed reinstatement area and then catotelmic peat will be placed to within 0.25 m of the target depth over the liner, within each bunded area, working from the rear of the area towards the outer limit of the footprint to a create a series of peat cells.

iii) Prior to placement of acrotelmic peat, the top surface of the catotelm will be tamped down with the excavator bucket to produce a level surface and minimise void space.

iv) Acrotelmic peat of approximate thickness of 0.25 m will then be laid over the catotelmic peat to achieve the total target depth (section 5.6 discusses appropriate sources for acrotelmic peat).

5.4 Restoration areas within Creed North

The Creed North restoration area is set within an extensive cutover bog to the west of the A859 (see Plate 2.3). Much of this area has been subject to peat depth probing early in the project in order as part of site appraisal and latterly restoration planning. Within the area probed, shown on Figure 10.2.3, peat in between the cuttings is still relatively deep, while the area closest to the A859 is shallower. Given that infrastructure is required to move peat to Creed North from the Proposed Development, it is this area that is proposed for restoration.

Excavation volumes associated with construction of access tracks for peat translocation are considered in Section 4, however, differentials in work-rate between excavation at Arnish Moor and reuse in Creed North are a major constraint on increasing translocation volumes. In simple terms, without a very protracted pre-construction period (of Proposed Development infrastructure), the rate of generation of material at Arnish Moor will exceed the capacity of plant operators to place it in Creed North without a lengthy period of interim storage (and a large area within which to place the material).

Aside from the need to construct access, transport, store and place material, the primary additional constraint on peat reuse is slope angle, particularly in ensuring any translocated material remains in-situ. Stability of placed deposits has been a key input to the restoration proposals.

5.4.1 Restoration proposals

The current ground surface comprises undulating topography with peat cuttings and intervening baulks (upstanding areas). While in many case the cuttings are well wetted, the adjacent baulks will experience drawdown of water tables associated with the margins of each cutting. The frequency of cuttings is such that roughly half the cutover surface is likely to be experiencing drawdown to some extent. As a result, the ‘sealing’ of cuttings with translocated peat will offer the following benefits:

a) Sealing the cutting margin, preventing oxidation of any exposed surfaces or underlying peat on steep or vertical gradients.

b) Providing continuity of ground elevation across the newly laid surface to produce a consistent ‘smoothed’ terrain better able to hold water uniformly across its surface, promoting more widespread recovery of wetter bog species.

The proposals are outlined below in the sequence in which they would be implemented. Following refinement of the OPMP in the event of consent, the requirement for use of Creed North will be reviewed.

5.4.2 Constructing access

Access from Arnish Moor via the 'grit road'

Peat excavated from Arnish Moor will require transport to Creed North, primarily from borrow areas 1, 2 and 3, which will be excavated at the outset of the construction process. Materials will be brought by 4 axle haulage vehicles with a c. 12 m^3 (12 t) capacity. These vehicles will require a fully constructed track to reach the restoration area. It is likely that the rate of generation of material at Arnish Moor will exceed the rate of reuse at Creed North, and therefore a temporary holding area will be required away from the Proposed Development and the A859. Currently, it is proposed that the to-be-decommissioned grit store will act as the holding area.

An indicative track alignment has been proposed between the holding area and former railway line running east-to-west through the centre of the restoration area. This passes largely over shallower organic soils and rock ridges for most of its route, with a small section of peat closer to the restoration area. This 'grit road' will be constructed, ideally of floating construction, using materials won from the bases of borrow areas 1-3.

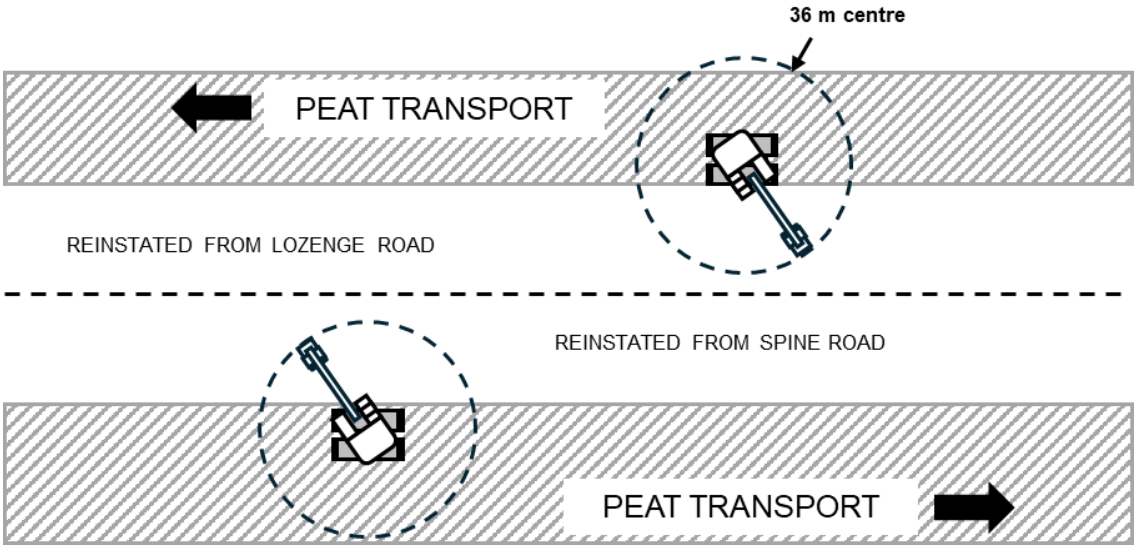

Plate 5.2 Track arrangements with 36 m centres for peat restoration

The 'spine' and 'lozenge' road

Once at Creed North, the railway line will be upgraded to provide sufficient room for haulage vehicles and excavators to pass one another (c. 12 m running surface). Minimal peat will be excavated for this spine road due to the existing groundworks supporting the original line.

In order to extend restoration away from the spine road, two additional cut and fill tracks will be constructed in parallel to the spine road, offset to the north and south by c. 30 m. These 'lozenge' roads will enable a typical 30 t long-reach excavator with an arm length of 18 m to work in a 36 m centre and therefore extend peat translocation outwards from the roads (see Plate 5.2). The roads will be elevated above the ground surface to act as retention structures. At present, the pre-upgrade former railway line sits between 0.5 and 0.75 m AGL. Figure 10.2.6 shows the grit road, lozenge roads, spine road and fill areas.

In the north, gradients are very gentle, and it is proposed to use translocated peat outward from both the north lozenge track and the spine road, which will be upgraded over a total length of c.

920 m from the join with the 'grit road'. To the south of the spine road and south of the south lozenge track, slope angles increase above 5° and for this reason no additional unbounded translocation is proposed.

5.4.3 Restoration works

The average of depth of translocation will be c. 1.0 m across the restoration areas. In reality, this will involve the use of slightly deeper peat in the cuttings and shallower peat over the baulks, but in all cases the in-situ peat will have some depth of translocated peat cover. Dependent on the quality of excavated turves from Arnish Moor as compared with available turves at Creed North, acrotelmic peat will either be translocated from stores or in-situ turves will be rolled back and placed over translocated catotelmic material. The work sequence within each restoration area will be proceed approximately as shown in Plate 5.3. The total volume of peat that will be relocated to Creed North is shown in Table 5.3.

Monitoring will be undertaken of the ground surface once the peat has been translocated to the restoration areas. Further detail is provided in section 6.

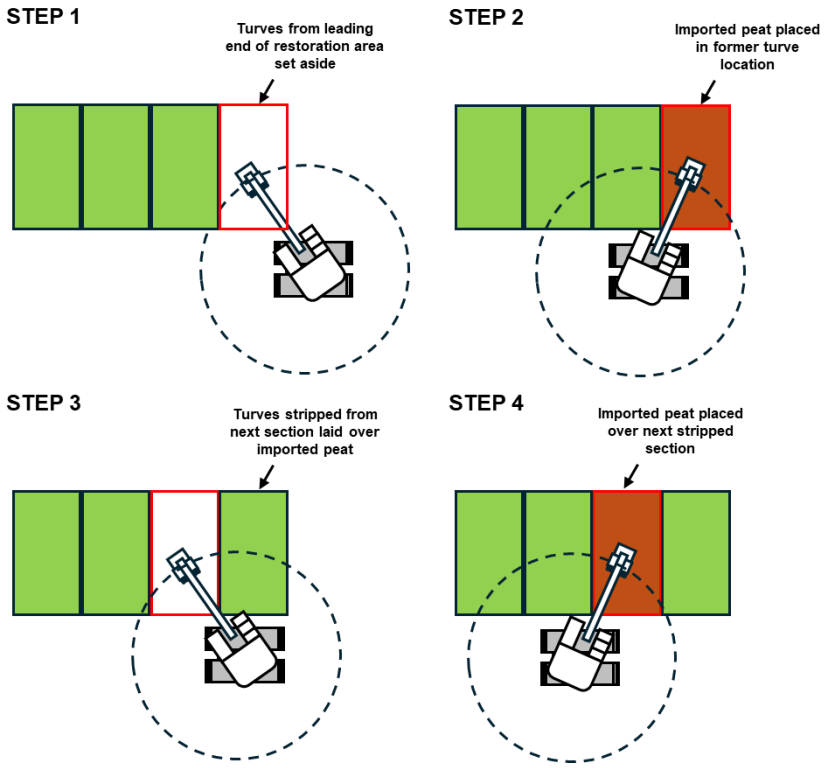

Plate 5.3 Indicative work sequence for peat translocation (green areas show working sections with acrotelmic peat, red outlines show section being worked, brown areas show sections with peat being placed)

Table 5-3: Peat translocation volumes to Creed North

Restoration location	Target Depth	Area (m^2)	Volume (m^3)
North infill area (between spine road and north track)	1.0	16,695	16,695
South infill area (between spine road and south track)	1.0	14,845	14,845

Restoration location	Target Depth	Area (m^2)	Volume (m^3)
North unbounded area (north of spine road and north track)	1.0	16,041	16,041
	Totals	**47,581**	**47,581**

5.5 Peat Balance

The peat and soil balance for the Proposed Development is shown in Table 5.3 below. At the PPiP stage, the key intent is to ensure that there are sufficient opportunities to reuse peat across the area of land accessible to the Applicant. Given that there is a degree of uncertainty about the final excavation volumes, the suitability of the borrow areas for rock extraction and the final sequence of construction, the intention is to demonstrate sufficient capacity at the PPiP stage. Given consent, a detailed construction sequence would be prepared with full mass balance and transfer calculations, sufficient to minimise generation of surpluses and to ensure that all peat excavated is appropriately used.

Table 5-3: Peat balance

Excavation and reuse summary	Peat volume (m^3)
Excavation	
Infrastructure (Table 4-1)	318,714
Borrow areas and access tracks (Table 4-2)	100,283
Creed North enabling works (Table 4-3)	3,936
	422,933
Reuse	
Temporary infrastructure reinstatement including access tracks to borrow areas (Tables 5-1 and 4-2)	40,822
Borrow area reinstatement (Table 5-2)	385,749
Translocation to Creed North (Table 5-3)	47,581
	474,152
Balance	**-51,220 (deficit)**

Table 5.3 demonstrates a surplus of capacity (or a deficit in availability) of peat at the PPiP stage. This means that there is more capacity based on current excavation and reuse volumes than required. The intent, given consent, would be to achieve a neutral peat balance with reuse equivalent to peat excavated, either by reducing the depth of extraction in borrow areas, or reducing the number of borrow areas. The current proposals allow for a conservative estimate of environmental impact, in line with good practice.

Additional probing within Creed North may identify other areas lacking deep peat in which additional access construction and peat placement may be of benefit. Current reuse areas are

based on Phase 1 probing only, which may overstate peat depths across the Creed North area. However work-rate limits may still preclude a significant increase in the volume of peat that can be stored in this area.

5.6 Sources of acrotelmic peat

At present, no attempt has been made to differentiate acrotelmic and catotelmic peat. Given the large footprint of permanent infrastructure within the Proposed Development, there will be a surplus of acrotelmic peat relative to catotelmic peat across the construction, reinstatement and restoration works as a whole. Therefore, there will be a need to reutilise the poorer quality acrotelmic peat within the reinstated borrow areas, using better quality acrotelmic peat to provide the finished surface. The following recommendations are made with respect to acrotelmic reuse:

- At Creed North, in-situ turves will likely be the higher quality acrotelmic material, and should be translocated in the restoration sequence shown on Plate 5.3. Acrotelmic material excavated from borrow areas 1-3, all of which have been subject to ploughing for forestry, should be 'sandwiched' between catotelmic peat exposed after turf stripping and placed over it after translocation, with the higher quality Creed North turves used for finishing.
- At Arnish Moor, turves stripped from the primary infrastructure footprints should be placed low down in the borrow area reinstatement sequence, since this peat has been affected by ground treatments that have led to its current modified bog condition. Catotelmic peat should then be placed over it before the areas are sealed with acrotelmic peat from Laydowns 2 and 3 (which are likely to have the better quality habitats).
- Reinstatement of Laydowns 2 and 3 and all borrow areas should use a composite of borrow area 5 and 6 turves and higher quality turves identified by the ECoW during excavation works.

Section 6 provides general good practice measures and monitoring recommendations for the proposed works.

5.7 Options to reduce the requirement for borrow areas and translocation to Creed North

5.7.1 Increasing the capacity of Creed North

At present, peat reuse via translocation to Creed North is limited due to i) minimising the need for additional enabling infrastructure within the area (access tracks), ii) the quality of existing peatland away from the proposed spine road / former railway, and iii) the time constraints on peat translocation being undertaken simultaneously to construction of the Proposed Development.

The suitability of the wider Creed North area for reuse could be reviewed through additional probing at a higher grid density. Were larger areas found to be suitable, it is estimated that the volume of peat that could be reinstated in Creed North may increase by at least 50%, possibly to c. 75,000 m^3, however this would still not be sufficient to accommodate all peat to be excavated at the Site and place a further burden on elongated programme and disturbance to the peat within holding areas and vehicle transfer.

5.7.2 Identifying additional reuse opportunities local to the Site

There are a number of potential reuse locations close to the Site where peat has been excavated for other forms of development, but land is no longer in active use. At present, these land areas do not form part of the land agreement for the Proposed Development, but in the event that they became available, peatland could be recreated in these locations. This would primarily occur through lining, rock / mineral bunding and peat translocation, with turving or seeding to reintroduce vegetation cover. The primary aims would be to prevent oxidation (carbon loss) and, in the medium term (the operational life of the Proposed Development) achieve habitats of equivalent quality to those disturbed in the construction area.

Disused land to the south of the site currently comprises c. 30 ha of earthworks, which could be engineered to hold peat generated from Site works and recreate peatland in an area where it was formerly present (up until 2008). Dependent on the target reinstatement depths, between 30,000 m^3 and 50,000 m^3 of peat could potentially be reused in bog creation in this area.

There are several other areas where peat has been removed around the Site boundary which could form the basis of nearby 'off-site' (outside the red line boundary) reuse in restoration.

5.7.3 Construction of elevated peat cells

The currently specified borrow areas provide a dual function in being a source of aggregate for construction and a repository for excavated peat. For any borrow area to be utilised, any peat that overlaps these areas must first be removed before a greater depth of peat is placed into the borrow areas later in the construction programme (see Table 4.4).

As alternative to excavating to the depths indicated in Table 5.2, the volume of peat placed within borrow areas and surrounding locations could be increased by constructing above ground cells with engineered lateral and downslope bunds, and in some cases this could be achieved without peat excavation (stripping turves prior to peat placement, placing peat over existing in-situ peat, and then reinstating turves). This would reduce the volume of rock and peat extraction while maintaining the availability of these areas for peat reuse, however the resultant peat deposits would sit higher in the landscape than is presently the case. It is unlikely that this would render the translocated peat in these areas non-viable, since much of Lewis comprises locally elevated peat deposits on rock or till ridges, with peat largely sustained by a combination of moderate annual rainfall volumes and cool maritime climate.

5.7.4 Reduction in area of / or dual use of hardstandings

Hardstandings within the Site service a variety of needs, including construction material storage, parking for plant and site offices and welfare areas. The number of laydowns has already been reduced from three to two as part of embedded mitigation works for the Proposed Development, however there may be further possibilities to reduce the footprint of laydowns through securing of additional land nearby to fulfil the same laydown functions. The current proposals provide a conservative assessment of impact and are consistent with good practice.

5.7.5 Increasing the number of borrow areas

The figures provided in this OPMP show two additional potential borrow areas that have not been incorporated within excavation and reuse calcs (borrow areas 7 and 8). They do not form part of the current proposals as the current interpretation is that the six borrow areas that are used

comprise the optimal areas in terms of capacity, access and construction complexity. Nevertheless, these areas could be utilised if Creed North proposals are reduced in scope, or if there is a preference to reduce target depths in the existing six areas (creating a requirement for additional capacity elsewhere).

5.7.6 Constructing elevated bunds

An alternative to excavating below the prevailing ground level is to construct long term peat repositories upwards over the existing ground surface, or to construct upwards from a reduced target excavation depth below ground. The former would preclude any aggregate extraction for construction, the latter would reduce any potential mineral excess, but would ultimately require peat to be placed permanently above the prevailing peat deposits that surround each knoll. In the sense that many of the peat deposits on Lewis sit atop local topographic highs and remain wet, this may not be problematic, however, for this OPMP, it has been assumed that peat deposits placed contiguously with the surrounding peat would be preferable.

6 Good Practice

6.1 Background

Good practice measures in relation to peat excavation and reuse are now generally well defined following a number of years of practice (at wind farm sites) across the UK and Ireland. In Scotland in particular, there is an increasing body of experience relating to peat restoration, facilitated by Peatland Action (Scottish Natural Heritage, 2017). As a result, there are now numerous specialist contractors who have experience in the planning, design and implementation of peat restoration works in the Scottish uplands. A key step in delivering the restoration proposals described above is identification of appropriate restoration contractors to implement the restoration plans at each location.

The sections below outline good practice measures related to excavation and handling, storage, and reinstatement and restoration of peat in association with construction.

6.2 Excavation and handling

The following good practice measures are proposed for excavation and handling:

- A minimum thickness of 250 mm of acrotelmic peat or turved organic soil should be excavated where sufficient soil is present; where less than 250 mm is present, the full depth of soil and surface vegetation should be excavated.
- Excavation and transport of peat/soil shall be undertaken to avoid cross-contamination between soil horizons (e.g. organic soil and underlying mineral soil / substrate).
- Where possible, cross-tracking of plant over undisturbed vegetation should be minimised, and excavated materials transported to their storage locations along constructed track.
- If working is required away from constructed roads / tracks, the use of long reach excavators should be encouraged in order to minimise cross-tracking.
- If landscaping of road / track margins is required for temporary works, it is preferable for vegetated organic soils to be used for this purpose rather than acrotelmic peat (which should be stored).
- Wherever possible, double handling of peat should be minimised (in particular for catotelmic peat) by direct transport of materials to their point of storage.

6.3 Storage

The following good practice measures are proposed for storage:

- Eliminate storage where possible by single handling from the point of excavation to a location of reuse.
- If storage cannot be avoided, minimise storage time by taking a holistic approach to excavation and restoration such that catotelmic peat (in particular) is used as soon as possible after excavation.
- Store excavated acrotelmic and catotelmic peat separately during excavation works, which

will be undertaken by an experienced contractor specialising in peat groundworks and restoration.

- Acrotelmic peat and turved soil blocks should be stored turf side up to prevent damage to vegetation.
- Storing in areas of minimal gradient where 'runoff' or drainage away from the point of storage is minimised (these areas will also satisfy to avoid areas of lower stability)
- Fewer, larger stores will be preferable to a greater number of small stores, since the total potential area of drying surface will be less.
- Where storage is required in the medium term, preparing the peat to minimise the surface exposed to drying (e.g. through blading off of catotelmic peat and use of appropriate cover to minimise moisture loss).
- The Environmental Clerk of Works (ECoW) should work with an appointed Geotechnical Engineer (GE) to review the placement and condition of stored peat.
- Storage areas should be outside any area identified in the PLHRA as of 'Moderate' or greater likelihood (see Technical Appendix 10.3, PLHRA) and, where possible, should be more than 50 m away from watercourses, away from sensitive habitats and away from the edge of excavations.
- Peat and soil stores should be appropriately bunded to prevent risks from material instability and prevent runoff of sediment and water from the stockpiles
- The condition of the excavated peat, in particular its moisture content, should be regularly monitored and local water utilised to periodically 'refresh' stored peat and prevent desiccation.
- A Sustainable Drainage System (SuDS) should be implemented to control water and sediment loss during storage.

6.4 Reinstatement and Restoration

The following good practice measures are proposed for reinstatement and restoration:

- Where possible, turves and underlying catotelmic peat should be reinstated at the locations from which they were removed.
- Any bare peat exposed at the surface of a reinstated area should be seeded with a seed mix or translocated vegetation appropriate to the locality.
- Where insufficient turves are available to full cover reinstated soils, a checkerboard pattern of turf blocks should be used, with turf squares no less than 1 m^2 to act as seed points interspersed amongst the bare areas.
- Reinstated ground levels should tie in with the surrounds, and any bulking up should be avoided by tamping down soils and turves.
- If appropriate, temporary fencing may be required to enable vegetation to establish following reinstatement works and prevent damage by livestock, deer or rabbits.

6.5 Monitoring

During construction, monitoring should be undertaken in any areas where peat is stored, as follows:

- Regular visual inspection of the outer peat surface of any stored peat to identify any evidence for drying, cracking (both from desiccation and slippage) and displacement.
- Regular coring of stored peat to log the moisture content of stored peat (using the von Post scale to monitor changes in moisture content for peat on the outside and within the peat mound).
- Clear specification of an action plan in response to these observations, including modifications to coverings, implementation of watering, or construction of temporary berms to retain water in the storage footprint.
- Acceleration of re-use for vulnerable stores if so identified.

Key to the success of the strategy for peat management will be careful monitoring of the post-construction works and any restoration activities. A monitoring programme should be initiated once restoration and peat reinstatement works have been completed, and should include:

- Review of % vegetation cover and vegetation composition in areas of bare peat that have been reinstated or in any areas that have been seeded (due to a lack of available turved material).
- Review of stability of deposits in their new locations.
- Fixed point photography in order to aid review over a series of monitoring intervals.

If required, mitigation recommendations should follow from the monitoring and include:

- Specification of seeding appropriate to the target vegetation or stabilisation with geotextile if revegetation is not occurring naturally (which will assist re-wetting and retention of moisture contents).
- Construction of wood dams (or equivalent) if any creep of peat soils is evident at any restored location.

Monitoring should be carried out for a minimum of five years after construction and reinstatement works have concluded.

7 References

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ANNEX 1 Indicative excavation and reuse sequence

An indicative excavation, transfer and reuse sequence is shown in Table A-1 below. This will be subject to the final post-consent design of the Proposed Development, detailed intrusive ground investigation (to determine the suitability of the borrow areas) and a post-consent, detailed material balance calculation.

Table A-1: Sequence of works, including excavation, storage and reuse (Note: RK = Rock Knoll, LD = Laydown, CN = Creed North, WA = West Access, EA = East Access)

Stage in Sequence	Storage and reuse
Excavate peat at RK1	Transfer to holding area
Excavate rock at RK1	Process and transfer to CN for enabling works
Reuse RK1 peat	Reinstate cuttings at CN with RK1 peat
Excavate peat at RK3	Transfer to holding area
Excavate rock at RK3	Process and transfer to CN for enabling works
Reuse RK3 peat	Reinstate cuttings at CN with RK3 peat
Excavate peat at RK2	Transfer to local holding area
Excavate rock at RK2	Store and use in construction
Reuse RK2 peat	Reinstate cuttings at CN with RK2 peat
Excavate peat at RK6	Reinstate RK1 with peat from RK6 (minimal handling)
Excavate rock at RK6	Store and use in construction of LD2
Excavate peat at LD2	Part reinstate RK6 with LD2 peat
Excavate peat for WA	Part reinstate RK6 with WA peat
Excavate peat at AC/DC	Complete reinstatement of RK6 with AC/DC peat Reinstate RK3 with AC/DC peat
Excavate peat at RK4	Part reinstate RK2 with RK4 peat
Excavate rock at RK4	Store and use in construction
Excavate peat at RK5	Part reinstate RK2 with RK5 peat Reinstate RK5 with remaining AC/DC peat
Excavate rock at RK5	Store and use in construction
Excavate peat at EA	Part reinstate RK2 with EA peat
Excavate peat at LD3	Complete reinstatement of RK2 and RK4 with LD3 peat

Stage in Sequence	Storage and reuse
	Complete reinstatement of RK5 with LD3 peat
Construct AC/DC	Complete all works except SUDs ponds
Reinstate LD2	Reuse surplus peat in LD2
Excavate peat at PD1	Part reinstate RK5 with PD1 peat
Excavate peat at PD2	Part reinstate RK5 with PD2 peat
Excavate peat at PD3	Complete reinstatement of RK5 with PD3 peat
Reinstate LD3	Reuse surplus peat in LD3


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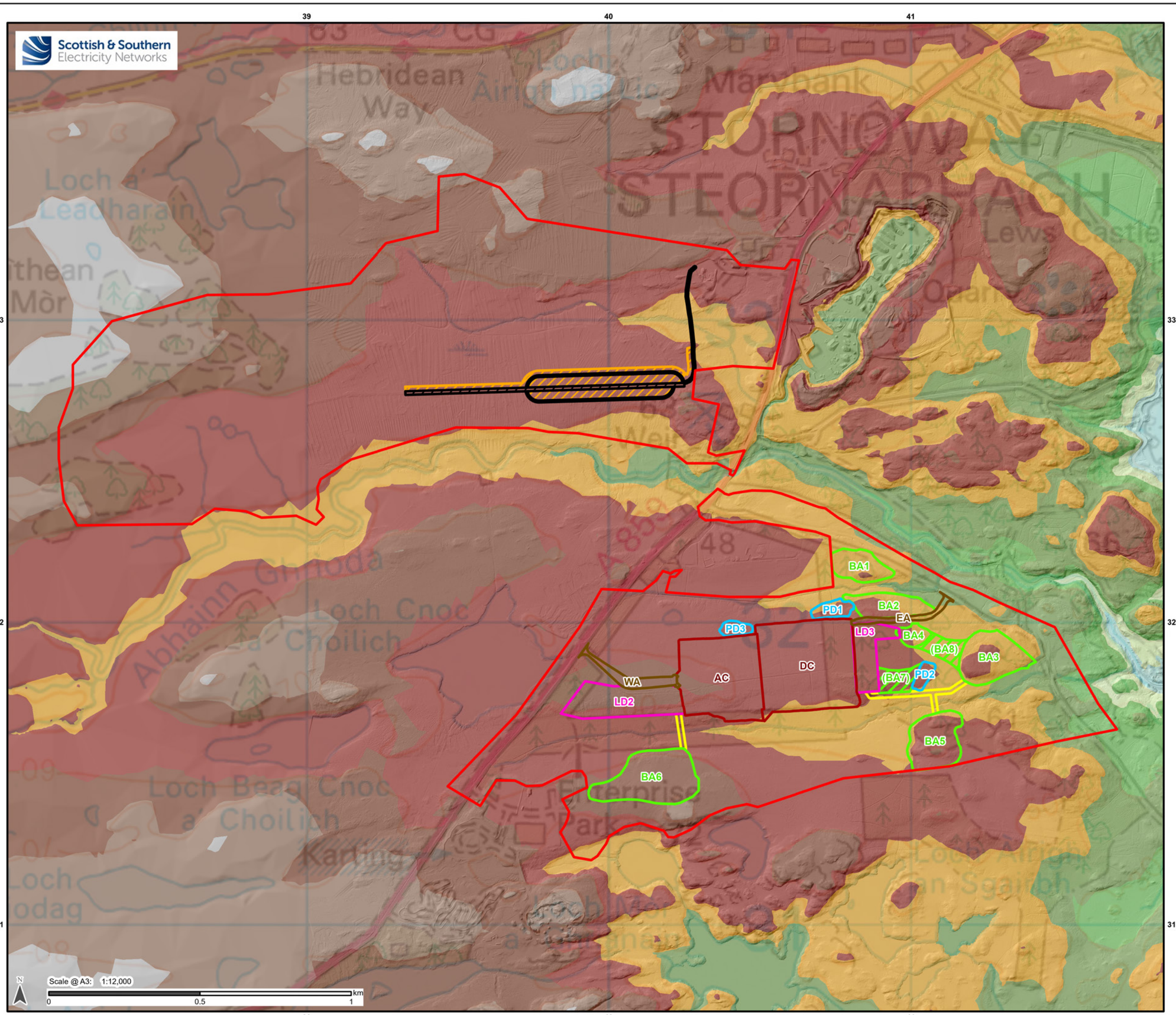


Legend

- Site Boundary
- Access Tracks (including earthworks)
- AC/DC Platform
- Laydown Areas
- SUDs Ponds
- Restoration Accesses
- Restoration Areas
- Borrow Areas
- Borrow Areas (not included in primary calculations)
- Borrow Accesses

Elevation (m)

- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90

Project No: LT000014

Project: Lewis Converter and Substation Hub

Title:

Figure 10.2.1: Elevation

Drawn by: RH Date: 20/01/2025

Drawing: OWC-042605-001-REP001-A-Fig-10.2.1

Scottish & Southern Electricity Networks

39 40 41

33 32 31

Hebridean Way

Loch a' Leadharain

Abhainn Ghrioda

Loch Cnoc a' Choilich

Loch Beag Cnoc a' Choilich

Loch Beag na Cairteach

Loch Mor na Cairteach

Loch Airigh an Sgairbh

Loch a' Chrotaich

Loch Lathamul

Loch Mor a' Ghrianain

Marybank

STORNOWAY

STEORNABHAGH

Lewis Castle

BA1 BA2 BA3 BA4 BA5 BA6 (BA7) (BA8)

EA

PD1 PD2 PD3

LD2 LD3

WA AC DC

Scale @ A3: 1:12,000

0 0.5 1 km

Legend

- Site Boundary
- Access Tracks (including earthworks)
- AC/DC Platform
- Laydown Areas
- SUDs Ponds
- Restoration Accesses
- Restoration Areas
- Borrow Areas
- Borrow Areas (not included in primary calculations)
- Borrow Accesses
- Watercourses

Slope (°)

- 0.0 - 3.0
- 3.0 - 5.0
- 5.0 - 7.5
- 7.5 - 10.0
- >10.0

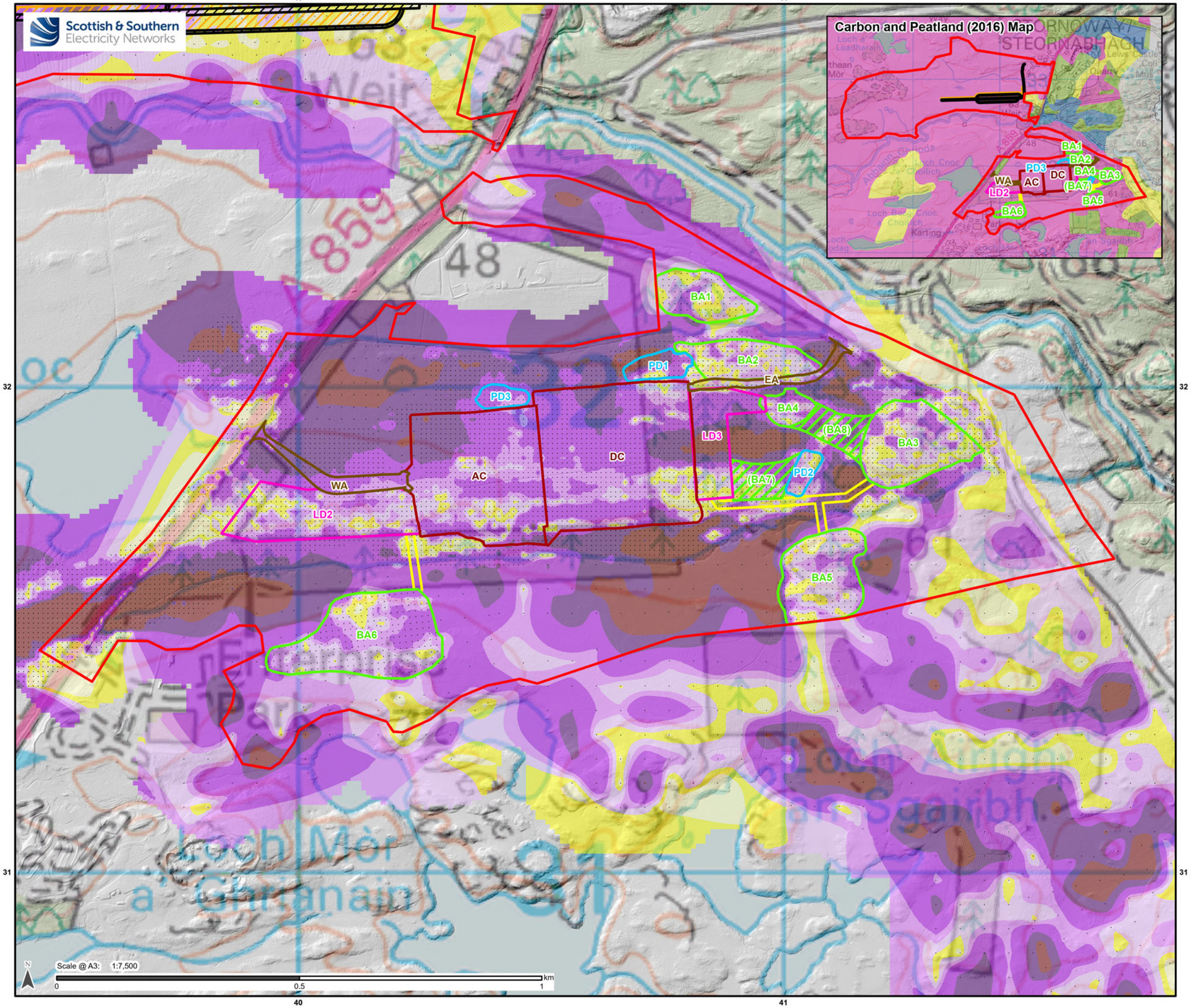
Project No: LT000014

Project: Lewis Converter and Substation Hub

Title: Figure 10.2.2: Slope

Drawn by: RH Date: 20/01/2025

Drawing: OWC-042605-001-REP001-A-Fig-10.2.2



Legend

- Site Boundary
- Access Tracks (including earthworks)
- AC/DC Platform
- Laydown Areas
- SUDs Ponds
- Restoration Accesses
- Restoration Areas
- Borrow Areas
- Borrow Areas (not included in primary calculations)
- Borrow Accesses
- Probe location

Peat Depth (cm)

- 0 - 30 (organic soil)
- 30 - 50 (organic soil)
- 50 - 75
- 75 - 100
- 100 - 200
- 200 - 300
- 300 - 400

Carbon and Peatland (2016) Map

- Class 1
- Class 2
- Class 3
- Class 5
- Mineral Soil
- Non Soil

Project No:	LT000014
Project:	Lewis Converter and Substation Hub
Title:	Figure 10.2.3: Peat Depth
Drawn by:	RH
Date:	20/01/2025
Drawing:	OWC-042605-001-REP001-A-Fig-10.2.3

Scottish & Southern Electricity Networks

40 41

32 31

Carbon and Peatland (2016) Map

BA1 BA2 PD3 DC BA4 BA3 WA AC (BA7) LD2 BA5 BA6

BA1 PD1 BA2 EA PD3 BA4 LD3 (BA8) BA3 DC AC (BA7) PD2 WA LD2 BA5 BA6

Scale @ A3: 1:7,500

0 0.5 1 km

Legend

- Site Boundary
- Access Tracks (including earthworks)
- AC/DC Platform
- Laydown Areas
- SUDs Ponds
- Restoration Accesses
- Restoration Areas
- Borrow Areas
- Borrow Areas (not included in primary calculations)
- Borrow Accesses
- Probe location

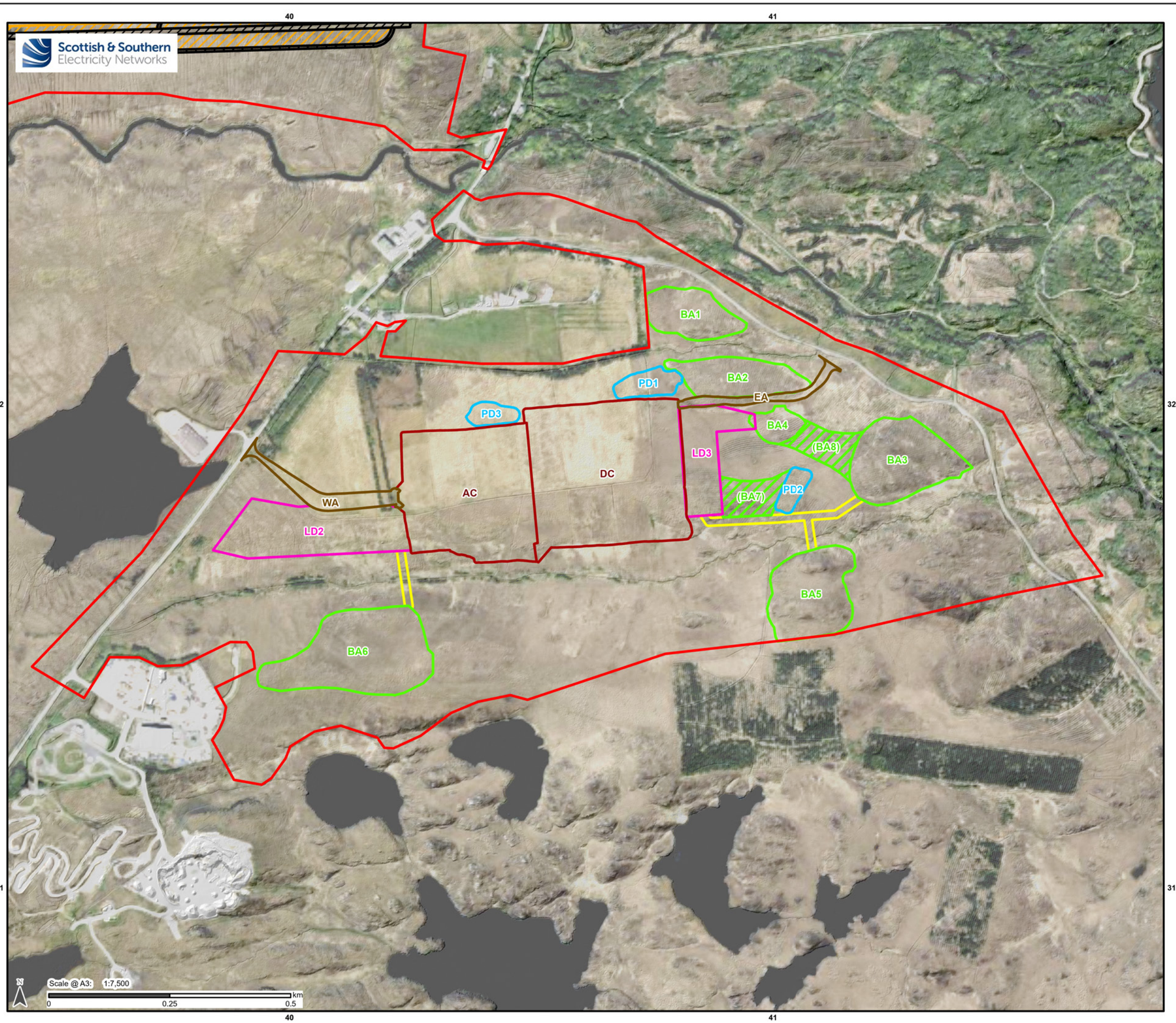
Peat Depth (cm)

- 0 - 30 (organic soil)
- 30 - 50 (organic soil)
- 50 - 75
- 75 - 100
- 100 - 200
- 200 - 300
- 300 - 400

Carbon and Peatland (2016) Map

- Class 1
- Class 2
- Class 3
- Class 5
- Mineral Soil
- Non Soil

Project No:	LT000014
Project:	Lewis Converter and Substation Hub
Title:	Figure 10.2.4: Peat Depth (Arnish Moor)
Drawn by:	RH
Date:	20/01/2025
Drawing:	OWC-042605-001-REP001-A-Fig-10.2.4



Legend

- Site Boundary
- Access Tracks (including earthworks)
- AC/DC Platform
- Laydown Areas
- SUDs Ponds
- Restoration Accesses
- Restoration Areas
- Borrow Areas
- Borrow Areas (not included in primary calculations)
- Borrow Accesses

Project No:	LT000014
Project:	Lewis Converter and Substation Hub
Title:	Figure 10.2.5: Borrow Areas
Drawn by:	RH
Date:	20/01/2025
Drawing:	OWC-042605-001-REP001-A-Fig-10.2.5

40

33

33

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Grit store / holding area

Grit road

North restoration area

North lozenge road

Spine road

South restoration area

South lozenge road

N

Scale @ A3: 1:3,800

0 0.25 0.5 km

40

Legend

- Site Boundary
- Restoration Accesses
- Restoration Areas
- Grit Road

Project No:	LT000014
Project:	Lewis Converter and Substation Hub
Title:	Figure 10.2.6: Creed North Restoration of Peat Cuttings
Drawn by:	RH
Date:	20/01/2025
Drawing:	OWC-042605-001-REP001-A-Fig-10.2.6